See Sir James Macintosh's notice of this Old Frere book [illegible] terms it, in his Preliminary Essay to the 8th Edit. of the Encyc. Brittannica p. 370

AN EXCLUSION OF SCEPTICKS

From all Title to

DISPUTE:

BEING

AN ANSWER TO THE VANITY OF Dogmatizing.

(This was by Joseph Glanvil)

By THOMAS WHITE.

—— *Sciri hoc sciat alter.*

LONDON,
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TO THE YOUNG WITTS Of Both UNIVERSITIES.

THough I doubt not of more powerful and ſeaſonabler proviſion againſt that deſtructive contagion of Pyrroniſm, which, not long ſince, has begun to take freſh heart: Yet, hearing no news of any publick Cauterization apply'd to that Tumour of Glanvil's, wch has rag'd now full two years; methought this ſilence of my Betters turn'd the task upon my weakneß, if not to avert, at leaſt to open & expoſe to be torn in pieces by eloquenter Pens the injuſtice of that Calumny impos'd on the whole Profeſſion of Philoſophers. Reflect then O flouriſhing Englands fertileſt hope! the Joy and Crown of your Mother, whoſe beholding you- with pleaſure ſwells her ſilent breaſt! reflect, I ſay, and ſeriouſly ruminate what you ſtrain to live and grow to; what perſons you hope and covet to become hereafter: whether wiſe and skilful to govern Chriſtian Life and Manners: or a crew of Rhetoricians, pleaſantly tattling unknown and uncertain things; and betraying thoſe under your Tuition into all Precipices that fall in their way: For, for

ſuch blind ones, and leaders of the blind, He ſets you out to the world, who inculcates to your England *the* Vanity of Dogmatizing *or promiſing* Truths.

I am not angry with the Man, who, with a great deal of wit and an unfordable ſtream of eloquence (which will ripen with his years) proſecutes what he propoſes to himſelf, and takes for a truth; not without ſome ſavour of Modeſty: for, neither does he derogote from Faith *the power of teaching its* Tenets, *nor diſclaim all hope of attaining Science hereafter through a laborious amaſſment of Experiments. But, he points to a certain perſon (whom he owns his Maſter) that, giving us the Heads of ſome Books he had written, thus concludes the ſecond,* Here it is where the chief Foundations of Pyrroniſm are laid; and that mainly eſtabliſht, that NOTHING IS KNOWN. *Well, indeed, may the Future deſpair, if the pains of ſo many Ages have brought it but to this, that* there's nothing known. *Have, then, the ſo many magnificent ſtructures of your Colledges been deviſ'd, only to delude the People with a deal of pretty talk, not a jot advancive of Reaſon? Have ſo many prodigious wits of your Anceſters been ſent abroad over all the Chriſtian World, but to ſell Smoak and Bubbles for Jewels & Pearls? Have you yourſelves the patience to be till'd on through ſo many years exerciſes, only to the like emptineſs? Scorn and hate that ſo foul a reproach ſhould be caſt on the Fame of all paſt Ages, and preſent induſtry.*

But, what, at length, has enveigled into theſe conceits that great Interpreter of Epicurus, *a Man never to my*

hearing

hearing, miſ-ſpoken of, either for Wit, or Life and Manners? Since I'm utterly a ſtranger to his Privy-Councils, I'le tell you what his Book ſeems to offer. There are two Sciences conteſted about: Phyſick *and* Metaphyſick (*between which that of the* Soul *and* Morals *take their places*). *The Firſt, content with few experiments, ſurpriſes Truth by vertue of Demonſtration, and fixes it by that force which alone is inerrable,* viz. *the power of our ſpiritual Intellect. This eye alone pierces into the ſtrength of Contradiction; and is onlily certain and neceſſary, as far as it ſcapes ore-ſhadowing by the ſenſes: but, it is not overlaviſh too, in making uſe of them; and advances in growth by* reflecting on it ſelf its inmoſt eye. Phyſick *is more florid, and with a Vernal look, as it were, ſooth's our ſpirit inclin'd to Body. 'Tis more abundant in Experiments, and meer Hiſtorical almoſt, unleſs aſſiſted and forc'd into Rules by this its Companion. That many court this gay one, no wonder, and ſlight her Elder Siſter as 'twere but dry leaves; whereas, yet, on her 'tis the Gallant depends, nor without her help and Principles borrow'd from her, is able ſcarce to demonſtrate any thing and advance by Cauſes connectedly. The ignorance of this neceſſity has bin the ruin of this Author, and many great Mens endeavours; nay, and will be, 'till the utter deſpair of getting forward teach firſt a retreat back again to ſettle Principles.*

Another rubb is the unbridled Impudence of very many Moderns, who loudly crack of Ariſtotle *and* Metaphyſick, *as oft as there falls occaſion of ſetting themſelves*

out. They fill the Book-Sellers Shops with mighty Tomes: they counterfeit the Higheſt knowledge by pompous skirmiſhes in their own ſchools; and by wonderful promiſes enkindle the native ardour of Science. By theſe Arts they heap on themſelves the honours and fruits due to Science; they flouriſh gayly and are propos'd to be ador'd in the Chairs. Mean while, look but into the matter, and thoſe vaſt Mountains bring forth this ſolution of Queſtions, perhaps I, perhaps No. *Hiſtories are related of what the Antients, what the Moderns have thought of any propos'd* Theſis; *petty reaſons for the I or No are ſhot out at random, as it were, from bands of Slingers or Archers: ſo their Pages get bredth, their Tomes bulk: but, when they come to give Judgment, out comes an Edict to this purpoſe,* All the Opinions are probable, but, this laſt ſeems to me the more probable. *What could be look'd for more ſilly from* Midas's *ears? What blind* Tireſias *could not as truly give verdict of Colours,* perhaps 'tis white, perhaps not? *What wonder now is it, if that ingenious Perſon derided ſuch ſolemn trifles? And imagining theſe men, becauſe none contradicted it, entertainers of* Ariſtotle *and his ſecrets, wholy neglected and contemn'd them.*

You, then, O Young Branches, growing up into Wine to rejoyce the hearts of Men! remembring that Vertue's the Mean hedg'd in by both Extreams, *neither diſclaim and deteſt* Ariſtotle, *nor ſuperſtitiouſly adore and embrace him. Thoſe things he has demonſtrated, though but few and ſeeming contemptible, yet receive. 'Tis the nature of*

Principles to appear vulgar and deſpicable; but there's not a ſtep can be made in Sciences without them. The foundations of Edifices lye buryed under ground, yet 'tis they ſuſtain the magnificent and towring fabrick. They that ſlight Ariſtotle's *Grounds muſt of neceſſity, being always in queſt of Principles, ever fall ſhort of Science. Yet, far worſe than theſe are they who feign and profeſs themſelves* Ariſtotelians, *and are Ignorants the while in the Method of Demonſtrating, & neglect what He preſcribes: Circumventers of Parents, Spiriters of Youth; whom, enveigled with a ſhew of Philoſophy, they betray to vanity and prattle: worſt Enemies of the Commonwealth; to which owing Youth adorn'd with Science & Vertue, they pay it fooliſhly-confident, ſophiſticate, and fitted by their education to ill and good alike. For you, let* Ariſtotle *be your Maſter, of few things indeed; but thoſe ſuch as fructifie into thouſands,* viz. *The whole race of ſeparated ſubſtances, the things neceſſary to be fore-known to Phyſical contemplation, and judgment, in fine, of experiments. You have now the Pleas of both ſides: 'tis your part to call aſide into Council with you that Candour and ſollicitude which ſo weighty an affair deſerves.*

The moſt earneſt coveter of
Your ſollid knowledge

THOMAS WHITE.

The

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An

An exclusion of

SCEPTICISM AND SCEPTICKS

From all Title to Dispute.

First Plea.

There is Demonstration and Science.

1. SCepticism, born of Old by an unlucky miscarriage of Nature, for her own Credit, carryed off the Tongues of the Eloquent where it had long been fostred, and buryed by the steddiness of Christian Faith; this Monster snatcht from the Teeth of Worms and Insects, *Peter Gassendus*, a Man of a most piercing Sagacity, of neat and copious Eloquence, a most pleasing Behaviour and wonderful Diligence, by a kind of Magick has endeavoured to restore again to life. He, a Person (which is the strangest of all) most tenacious of Catholick Faith, and never suspected guilty of mischievous Tenets: whereas, yet, this Scepticism is the Mo-

ther of infinite Errors, and all Hereſies, and that very ſeducing Philoſophy and vain fallacy which the Saints, warn'd by the Apoſtles, have taught us to beware of. Heard, this man, otherwiſe eminent in his paradoxical *Exercitation againſt the Ariſtotelians*, has dar'd to expoſe, not vail'd, as before, and wandring like a Quean in the dark, but bold-fac'd and painted, to the Multitude and Market place.

By his Example, the Author of *The Vanity of Dogmatizing* has produc'd her amongſt us beauteouſly trick'd-up in Engliſh: He, too, a great Maſter of Wit and Eloquence. Nor indeed are vaſt miſchiefs to be dreaded from Vulgar heads. This is the occaſion of my undertaking; and this my Deſign (if Heaven vouchſafe to enlighten and guide my pen) to force back into her Grave this Carcaſs that would be rivalling Science, and deliver her up a Feaſt to her former worthy Commoners. Come on then, let's untie the knot of the Queſtion.

3. Since, then, 'tis of Science we are to ſpeak, its *genius* would in ſome meaſure be look'd into. Nature her ſelf, therefore, teaches us, that Man is an Animal endued with *Reaſon*, to fit him for governing his Action, and *Reaſon* is allowed to be That whereby what before was unknown is rendred known: dayly Experience alſo convinces that our Action conſiſts for the moſt part in ſuch things as are ſubject to an infinite and inſuperable mutability and variation: whence it comes to paſs, that that Vertue which is immediate to action cannot properly be called Science (ſince 'tis

'tis not infallible, and the effect of demonſtrative Diſcourſe) but a power of conjecturing aptly; and uſes commonly to be term'd *Prudence*, either properly or derivatively; properly, if it be concerning the thing to be done, as to its right proceeding from Reaſon; analogically, if of the action or thing to be done, as it regards ſome other inferior Faculty ſubſervient to the dominion of Reaſon. Now *Prudence* depends on two previous Powers, *Art* and *Inference* or *Experiment*. *Art*, though it ows its birth to Experience, yet is ſuſtained by univerſall and unfailing Rules: But, it ſelf underſtands not the neceſſary and indefectible efficacy of its Rule; but is content with the teſtimony of ever-correſponding effects. Inference, or *Experience* for the moſt part is true, but neceſſitates not aſſent, becauſe not univerſal.

4. Setting this therefore aſide, 'tis clear the Decrees of Art, ſince ſhe is veracious, have neceſſitating and neceſſarily connected Principles, which force the effect of Art to be not poſſibly otherwiſe than as Art teaches 'twill ſucceed. Whence follows, that the ſubject Matter of Science and Art is the ſame; and every Art has a proper Science due to it ſelf, if the nature of Man would ſtretch to attain it. But, the ſame warning we gave before concerning *Prudence*, muſt be repeated concerning *Science*. For, as he who behaves himſelf prudently in any Artifice, is not therefore eſteem'd and ſtil'd *a prudent man*; but only he who rightly tempers

his Action *in as much as 'tis Humane*: ſo, neither is he, with propriety, to be called *a knowing man*, who skills the demonſtration of Duelling, or Verſifying; but he that has the demonſtration of thoſe things which are Principles for governing our life, *in as much as 'tis Humane*: The chief whereof is that which has merited the term of Theology, or *Metaphyſicks*: the next is *Ethicks*: then *Phyſicks*, or Natural Science; whether, becauſe all corporeal Natures, or the World, is propoſed to the diſputation of men; or becauſe, next Metaphyſical Contemplation, nothing ſo much advances our deſired Beatitude as Phyſicks. Nor yet are *Mathematicks* to be excluded; both becauſe *Quantity*, their ſubject, is the Veſture of thoſe bodies which Phyſicks ſpeculate through; as alſo, becauſe the Rules, and as it were, the demonſtrableneſs of Natural things at every ſtep depends on them. Out of all which 'tis clear, that in nothing Equivocation more lewdly cheats Man-kind, than in this term of *Knowing*, or *Learned men*. For, if Maſters in Sciences, analogically ſo called, are not really worthy this name: how much further off meriting ſo noble a Title are thoſe, whoſe ambition ſtreins no higher than, like Parrats, to repeat others ſentiments? and how manifeſtly pernicious are they that have the confidence to apply ſuch learning to the government of humane life; and vent poiſon, or at beſt, ſmoak, under the Reverend name of Science?

5. It follows, that ſuch Science 'tis we propoſe to our ſelves as is beneficial to Humane life. And concerning this, three things offer themſelves to our enquiry. Whether there be at all any certainty attainable, at leaſt of one Propoſition or one Reaſonment, which we call a Sylogiſm? At this hangs the next, Whether at leaſt, any Habit, or *Series* of more Truths traced with certainty (ſuch as generally are eſteem'd thoſe which Arithmeticians and Geometricians profeſs) may be acquired by humane induſtry? The laſt *Queſtion*, by moſt (at leaſt in practiſe) diſputed (whate're in words they pretend) is limited to Phyſicks and Metaphyſicks; whether about the objects of theſe any beneficial Multitude of Truths may be ſpun out connectedly; as the Maſters in Mathematicks ſeem already to have done? And herein conſiſts the uſefulneſs of my diſcourſe; and the deſparation or difficulty of this Concluſion compels me to clear the former; which of themſelves by their own evidence had ſtood unſcrupled, had not the ſtep, and almoſt neceſſary conſequence they afford to the third, terrified thoſe who feel ſuch difficulty to yield this laſt.

6. To work, then; let us fix the firſt ſtep, and aſſert, as invincibly known, and unſhakable by any Art of the *Scepticks*, that *What is is*, or that what terminates and ſpecifies an Identical Propoſition as its Object is ſelf-evident: as if we ſhould ſay, that *Peter* is *Peter*, Wood is Wood, a ſtone is a ſtone; and whatever

ever others carry as open-fac'd an Evidence. The Scepticks I imagine, will laugh at this Axiom as fooliſh: becauſe Identical Propoſitions uſe to be excluded from the rank of Scientifical ones, and the Sciences themſelves; as nothing at all advancing the underſtanding. But, by this their very laugh they'l yeild us the Victory; as confeſſing Evidence in theſe, however they be uſeleſs: And therefore that wherever the ſame neceſſity ſhall Intervene, there cannot want Evidence. One thing in this poſition occurs a little cloudy, obſcuring it through a Miſt caus'd by the ſhadow of that moſt acute Perſon, *Renatus des Cartes*; who, ſeverely prying to deſcry the very firſt thing falling under knowledge, beat it up at length to this, that the firſt thing every one knows, is, *that Himſelf thinks*. But, the difference of our Opinions, I conceive, has ſprung from hence, that, whereas Science may be conſider'd both in its Generation and in its Subſiſtence; He has taken the former Method, I the later. For, really, if we examine by what degrees Science is born in us, we ſee, the firſt thing that happens is to have a paſſion made in us by Bodies; and the firſt evident thing that ſtrikes us is that *we think*. But, if, looking upon Science now exiſting, and as its twere at reſt in us, we enquire what 'tis that faſten truth to our Minds, ſo that we cannot doubt or, as 'were, waver about it: Nothing will appear more ſimply or originally manifeſt then that *what is is*, wherein

wherein, in a manner, is formally included that what is ſo is, that, whilſt it is, it cannot not-be; which, indeed, is, that the underſtander is *certain* that the thing is, or has a *fixedneſs* concerning the truth which is in him.

7. It being determin'd that an Identical Propoſition is evident, 'tis equally determin'd that Propoſitions term'd *ſelf-known* are evident: for, if they be look'd into, twill be clearly ſeen, that a ſelf-known Propoſition is in ſome ſort compoſed of an Identical Propoſition and another otherwiſe evident, or taken for evident. For, there are two ſorts of ſelf-known Propoſitions; one wherein the Generical Notion is predicated of a *Species*; another wherein the *Species* are predicated diviſively of the *Genus*. Take theſe for Examples: *A Man is an Animal*: the ſenſe is, *A Rational Animal is a ſort, or one of the Animals*: The evidence of the Propoſition conſiſts in this, that the word *Animal* ſignifies, as it were formally in predication, to be *one of the Animals*; and the word *Rational* denotes that whereby a Man is one of the Animals. Wherefore in this Propoſition, *a Man is an Animal*; theſe two Propoſitions ſhrowd themſelves, *one of the Animals is one of the Animals*; and that other, that *Rational is a determiner of Animality*: Now this later is not affirmed, but taken for granted, either from Senſe as it were, or ſome other way ſuppoſed to be known and paſt doubt; and in force of the former Identification, tis concluded

that

that *a Man is an Animal.* In like manner when 'tis ſaid, *Number is either even or odd, Bulk is either finite or infinite*; and whatever Predicates, contradictorily oppos'd, are predicated diviſively of a Subject; two propoſitions lye in them; one an Identical one, for example, that *even and not-even are all, or compriſe all the kinds of Number*; and another otherwiſe known, *viz.* That *ſuch a Number*, for example, *Ten, is a certain Number.* This later is known as it were by ſenſe; or ſuppos'd, not affirm'd: The former is equivalent to this *all Number is all Number*; and one of all the Numbers, for example; *Ten*, is affirm'd to be one of the even or odd, becauſe, by force of the contradiction between even and not-even, even and odd muſt of neceſſity compriſe all Numbers, or even and odd and all Number be the ſame.

8. The ſame force of Identity is alſo clear in a Syllogiſm: For example, when in the firſt Mood, or *Barbara*, two ſelf-known propoſitions are taken and another truth, unknown before, is concluded out of them. As, when tis argu'd that *Every Man is a living Creature, becauſe every Man is an Animal*, and *Every Animal is a living Creature:* there's made an Identification of *Man* and *living Creature*; or rather it is diſcovered by the double Identification of Animal with the Superior and Inferior. The force therefore of the Syllogiſm whereby it fixes the mind in this Identity, that *Man is a living Creature*, lies in nothing but this, that through

through the former two Identifications it reſts fixed as to the Premiſſes. Plain therefore tis, that the light of an Identical Propoſition ſhews it ſelf both in ſelf-known Propoſitions, and in thoſe which are concluded by Sylogiſms: and, which follows, either that the truth of an Identical Propoſition is not evident, or elſe that ſelf-known propoſitions, and ſuch as are concluded by a legitimate Sylogiſm are Evident and moſt certain: and, that it cannot be doubted, ſo many truths are palpably certain as can be reacht by a legitimate deduction of Sylogiſms. Since, therefore, he cannot be eſteem'd other than a Mad Sot that ſhould deny the Evidence of an Identical propoſition; he cannot be reputed Rational who ſhould at all reject propoſitions ſelf-known, or collected by legitimate Diſcourſe.

9. Be this, therefore, a Demonſtration *a priori*, as they term it, of this truth, that *there is ſome certainty or Science*; that, ſince tis undenyable that *what is is*, or, an Identical Propoſition is true, and every Propoſition, whether ſelf-known or Sylogiſtically-concluded, has no other neceſſity than what ſhews it ſelf in an Identical one; there can be no doubt of theſe, unleſs Identical ones, too, be called in queſtion. For, ſince, in a ſelf-known Propoſition, tis Evident, that the thing ſignified by one Term is that which is ſignified by the other: And in a Sylogiſtically-concluded Propoſition, it likewiſe appears,

that becauſe *A* is *B*, and *B* is *C*, *A* too is *C*; or that, unleſs *A* be *C*, *A* will not be *A*; for 'tis not *A* unleſs it be *B*, nor *B* unleſs it be *C*: 'Tis Evident that whatever is evinced by a legitimate Sylogiſm, has the ſame neceſſity as an Identical Propoſition. Since therefore 'twere meer perverſneſs, and ſuch as cannot fall into humane Nature, to doubt whether an Identical Propoſition be true; tis abſolutely manifeſt that whatever is concluded by ligitimate diſcourſe out of ſelf-known Propoſitions is engrafted, beyond any danger of ambiguity; or, that there is Science of all ſuch like: And therefore that *there is ſome Science*, and that, indeed, of many truths. Now, that which either in a ſelf-known or in a Demonſtrated Propoſition, is aſſum'd beyond Identical ones is not capable either of truth or falſhood; but, in a manner, is taken by way of ſnppoſition; as if 'twere ſaid, *if he be a Man*; *if it be an Animal*: I ſay, for as much as *Man* or *Animal* are the ſubjects of the Propoſitions or Premiſſes.

Second

Second Plea.

The Scepticks alledge nothing Sollid.

1. NOw, to the Scepticks, or Scepticiſm it ſelf. What ſays the Sceptick? Though, ſays he, nothing be certain, yet many things appear true to us; and, out of ſuch appearance we proceed to Operation. Thou entangleſt thy ſelf, Sceptick! for, how, whilſt, in common, it moſt clearly appears to thee that nothing is true; yet aſſerteſt thou, in particular, that *this* appears to thee true? Can theſe two ſtand together; it appears that none of thoſe things propoſed us are true; and at the ſame time, it appears that ſome of them are true? Beſides, if any thing *appears* true, 'tis becauſe it deceives us with the face and ſimilitude of certain or true, (which two, as to us, ſpeak the ſame thing; for, we ſay, that is *certain* which we know to be true, or which is true to us): But, 'tis clear, we cannot affirm any thing to be like another, if we know not that other: If therefore, there be amongſt us no *Certainty*, or nothing *known to be true*; nothing can ever be or appear *like* Certainty amongſt Men. 'Tis, therefore, ſtark folly to joyn theſe two togther, there *is* nothing certain, or ther's no Certainty; and yet ſome things *appear* certain.

2. For all that, the Sceptick will ſtand to it, that at leaſt this appearance is enough for humane Action: ſince all Action is ſingular, that is, in infinite Circumſtances upon which Demonſtration has no force, but only Prudence, or the power of conjecturing which is to be prefer'd before other. Notwithſtanding, if the Action be truly *humane*, that is, purely and thoroughly govern'd by Reaſon, this Sceptical appearance is not enough for it. For, firſt, ſince Prudence is an Intellectual vertue, it cannot be indifferent to Truth and Falſity; but always tenacious of truth. In Action, therefore, govern'd by Prudence two things fall under conſideration; that which is moſt conſpicuous and ſpy'd by every one is, whether the Action be like to attain its immediate and next end, to which 'tis deſtin'd: And this for the moſt part is uncertain; but withall, in this conſiſts not the primary effect of Prudence, but a certain faculty of gueſſing, which they call *Sagacity*. The other thing, wherein eſpecially Prudence plays its part, is whether this Action be to be done *here* and *ſo*: For which it ſuffices that two things be certain; One, that the Actor is led by no Paſſion; the other, that he has uſed pains, or diſquiſition enough; which depends on the former; ſince that will not fall ſhort, unleſs ſome Paſſion makes the Actor precipitate. But, as far as the ſoul proves deficient in theſe two, ſo much, too, ſhe deviates from the Rule of Prudence. Now, theſe two may be very clear

clear to an experienced Perſon. Farther, this *Tenet*, again, of the Scepticks fails of *ſufficiency for Action* in the very firſt root of Acting, *viz.* Whether any thing be to be done, or whether Action be wholly to be ſuſpended: For, in vain the underſtanding tugs at it, what Action to perform; unleſs it be firſt evident that ſomething is to be acted: They therefore, who profeſs not ſo much as this is known, that ſomething ſometimes is to be done, cannot be mov'd to Action out of pure underſtanding. Nor can it be reply'd that it appears to the Sceptick he is to Act: For, ſince Appearing is common to true and falſe; Nay, ſince 'tis known that falſe is oft-times more probable and apparent, than true; 'tis plain that neither Probability in general, nor the greater Probability can have any force at all to cauſe Aſſent. But, if one has not aſſented to this Univerſal propoſition, *ſomething is to be done*; 'tis plain that, as to pure Reaſon, he has no principle of Acting: And, if he has any other principle beſides, Reaſon, the Action, as far as it ſprings from that, is not Rational. It muſt therefore be concluded that all action of the Scepticks is utterly not-humane, but only Brutal; as riſing purely from ſenſe and imagination: Or, rather worſe than Brutal; in as much as they force Reaſon to ſubmit to and ſerve ſenſe.

3. But, that which highlyeſt croſſes this Sect is, that Profeſſors of Science much undervallue themſelves,

ſelves, if they vouchſafe to diſpute with them or endure to hear them babble. For, ſince in all humane nature, no Sect is to be found more addicted to prattle, and more greedy of that vanity which follows tinckling Cymbals: At what a diſtance will they be from their Beatitude, if among the adorers of Science they be not allow'd to vent their trifles? Let us, therefore, fairly weigh this, whether they are to be admitted among the Profeſſors of Learning. Scientifical Perſons, then, are either Maſters or Diſciples; that is, ſuch as have already attain'd the habit of Science, or ſuch as endeavour after it, or are ſeekers of truth. Since, therefore, tis plain, the Scepticks profeſs not themſelves Poſſeſſors of the Science; it remains they are to be reckoned among the ſeekers; wherefore, ſince this contradicts it ſelf, that one ſhould ſeek what he thinks is no where, or at leaſt, which diſpairs poſſible to be found; in vain they declare themſelves Candidates or ſeekers after Sciences. Add to this, that, ſince they neither admit ſelf-known Propoſitions, nor any legitimate Conſequence of Diſcourſe; they have no way or Method of ſeeking, or any trace from which to commence their ſearch: But, if they admit any of theſe two, they cannot but acknowledge ſomething certain.

4. It ought, therefore, be objected, at the very begining, to ſuch contemners of Sciences; what attempt you? what's your aim? How have you the confidence

to

to attaque any one that's truly a man? For, whence ſhall what you ſay derive any appearance? Is it not juſt to preſs on you to prove firſt whatever you aſſume; and this without ever coming to an end? You therefore, will never be able to aſſume any thing that can prove our *Tenets* falſe or uncertain. Again, will you uſe any other form of Diſcourſe then *Sylogiſtical*? But, this you deny to be evident and certain. You, therefore, come but to deride, fillily to play the Rooks, and chatter figments like Poetical Magpies. You I reply, perhaps, you diſpute *ad hominem* (as they term it), and ſhew, out of thoſe things which our ſelves have accepted, that what we teach thereupon has no certainty. What's your meaning? If indeed you endeavoured this in any one *Tenet*, it might be allow'd you to try what you were able to do: But, if univerſally you aſſert us unable to make good Conſequences, you call us Beaſts and deſerve not the hearing. And, you your ſelves, how will you evince any one Conſequence to be ill? Will you tell us how it ought to be, to be good, you I ſay that grant none to be evident? Again, why will ours be falſe, and yours good? But, if you affirm your own not good neither; what madneſs poſſeſſes you, that you cannot ſuffer us to reſt even in our Error; when you neither can nor ſtrive to exempt us from erring? Tis ſweeter, ſure, to believe one-ſelf in the light, then to know one-ſelf in darkneſs and all light hopeleſs.

5. In

5. In fine, To what purpoſe do we amaſs Arguments againſt thoſe, who, as far as in them lies, have put off Humane Nature, and made themſelves Beaſts? For, if *to Reaſon* be to advance our ſelves, out of certain and known things, to things before unknown and uncertain; and nothing be certain: neither is any Reaſoning poſſible; nor conſequently any power of reaſoning; or *Animal* endowed with it. But, if nothing be *certain*, nothing, too, will be *true*, ſince that is *certain* which we *ſee to be true*; that is, truth had, our Truth *true to us*, True by which we are true. For, clear it is, that our Nature is covetous of Truth in it ſelf; that, when we or our underſtanding is true, being impregnated with this Truth, it may be made operative, and Maſter of all things without it; or, that it may purſue uſeful things, fear ſuch as are to be fear'd contemn things contemptible, and reject all manner of counterfeit ſcare-crows. He fruſtrates, therefore, the whole bent of Nature, that denies there's any certainty; and utterly evacuates, as Nature her ſelf, ſo alſo her moſt vehement deſire and aim. What need I mention Humane *Converſation*, but eſpecially *Negotiation*? for, if there can be nothing certain in Humane matters, why do we inſtruct Infants and Boys? why ſtrive we to perſwade Youth into thoſe things which ſeem True to us? for, if there be no certainty acquirable, tis to be judg'd wholly indifferent what every Youth does, or whither he tends: Eſpecially, ſince not ſo much as this

this is certain, that one thing is more probable than another; and far leſs, that what now is more probable will be ſo when the Boy comes to chooſe it.

Third Plea.

*Tis imprudent to deny the exiſtence of Sciences.

1. LEt us raiſe our Style, and enlarge it to entire Habits. Can it be believed, that men of excellent wits ſhould be ſo fond as to deny thoſe things that Humane life is full of; and without which there's no living, at leaſt commodiouſly? I mean Arts. Let's conſider what part of our Action or Life is exempt from their ſervice: what Arts go to the providing us Food, Cloaths, Houſes, Delights? Our minds are cultivated with Liberal ones: the Fields, Mountains, Seas are maſtred by Arts. To conclude, What is there that falls under mans uſe, wherein ſome kind of Art is not exerciſed? Art, therefore, what is it, but a Rule which commonly fails not? This, then (if mens ſouls but own themſelves) is certain, that *Art, for the moſt part, fails not.* What if I ſhould ſay, that it never fails? but either the Artificer is unskilfull, or elſe, through lazineſs or knavery follows not the preſcription of the Art, as oft as any Error happens. But, be it ſo, that Art ſometimes fails; at leaſt, the whole

courſe of our actions is grounded on this that, *commonly* it fails not: Wherefore ſince what never fails is certain, *Art*, which in moſt caſes never fails, in moſt caſes is certain; and whoever denies this, either out of ignorance or ſtomack, oppoſes himſelf to very Nature and the Order of things. This is, therefore, a throughly-atteſted Truth, that there are intire and complete Habits of Certainties: ſince, both of the ſeveral *Arts*, in common, tis certain that for the moſt part they attain their effect; and the ſame is as evident of the ſeveral Members and Joints in each Art in particular.

2. The next place *Mathematicks* challenge, which have gain'd the true name of *Science*: firſt, *Arithmetick* and *Geometry*, each of ſo large an extenſion, that they make up many entire habits; and if they be acknowledg'd for *Sciences*, they leave no room for oppoſing others, upon pretence of the abundance of their *Doctrines*, or the largeneſs of their *Subject*. Such, again is the ſteddineſs of *Atteſtatition* to theſe *Sciences*, of ſo many Ages, ſo many eminent Wits, by ſhewing and perpetuating ſo many Effects, beyond the eſtimation of humane Prudence; that there can be no doubt but they winch againſt Nature it ſelf that calumniate theſe *Sciences*. Let's behold the multiplicity of Sylogiſms; the derivation of far diſtant Truths by intermediate Propoſitions, immediate to one another; and how many Principles or fore-known Truths are ſometimes made uſe of towards the ſearch of ſome one: and we

ſhall

ſhall ſee theſe *Sciences* will not ſuſtain themſelvs alone, but extend their power to others alſo; and perſwade, nay, evince, that there's nothing but may be demonſtrated, if there want not Induſtry.

3. Yet I am not ignorant what uſes to be urg'd againſt theſe *Sciences*, eſpecially againſt *Geometry*: which though in other *works* I have ſometimes repell'd, yet here too, as in their propereſt place, they are again to be repeated; chiefly becauſe the *Scepticks* no where, in my judgment deſerve more applauſe. For, plain it is, though nothing be farther from the meaning of the *Geometricians* than what the *Scepticks* lay to their charge; yet nothing appears clearer in the Terms they uſe, than what they mean not: *Providence* ſo ordering it, That thoſe things which beſt guard themſelves by their own evidence ſhould be moſt infeſed with prejudices; to warn us, in more obſcure points, not to deſert evidence, though we be hard put to't with weighty, perhaps, but obſcure Argments. For, what's more manifeſt than that Geometricians require *a ſtreight Line to be drawn from one point to another*? That they diſpute, whole Volumes full, concerning *Lines* and *Superficies*? That they demand *a Line to be drawn out in infinitum*? That *a Circle be made*? *An equilateral Triangle*? And a thouſand ſuch like: That none of all which, yet, can exiſt in the world, 'tis either certain, or, at leaſt, ſo ambiguous that it ought not to be preſum'd without Demon-

ſtration; whereas the Geometricians neither attempt nor promiſe any ſuch thing.

4. Notwithſtanding in all theſe, tis no hard matter to ſatisfie an attentive Reader. For, I ask, whether or why tis not lawful for a *Mathematitian* to ſpeak univerſally of his Object, in the ſame manner as both the Learned and Unlearned talk of theirs? He may then ſpeak of the body propoſed to him, as tis *long*, not treating at all about it, as tis *broad*; ſince for a Body to be *broad* is nothing elſe, but to be *long according to two Dimenſions*. In like manner, ſince a Body to be *deep* ſignifies it to be *long according to three Dimenſions*; what an envious part 'tis not to allow the ſame to be conſidered as *broad*, abſtracting from the third Dimonſion? Theſe things being clear to the utmoſt pitch of evidence; and ſo that we cannot ſpeak otherwiſe according to Nature; let's ſee wherein lyes the fault of the Geometricians. You urge that they aſſert there is a *Line* in being, that is, *Longitude without Latitude*; I deny it: You prove it, alledging they mark a *Line* with letters, ſaying the Line *A. B.* I demand, to what purpoſe ſerves this marking? Is it for any thing but to notifie the Longitude of the Body they meaſure? If that be all, then the ſenſe which ſerves the Mathematicians turn in the words is, that the Body propos'd, according to Longitude, is equivalent to the diſtance between *A* and *B*. And, if he aſſumes any more, it muſt of neceſſity be ſomething im-

impertinent to his Diſcourſe, which Geometricians, of all men, are fartheſt from.

5. The very ſame may be ſaid for their manner of ſpeaking concerning a *Superficies*. But, for *Points*, the ſolution is more evident: For, in ſtead of this word *the Point A*, or *the Point B*, put the word *End* or *Term*, and there will remain no ſhadow of difficulty. For, who can doubt but that a Body, *as Long*, is terminated: and therefore can forbid an End or Term to be aſſign'd it? For the reſt, 'twill eaſily appear the like Diſcourſe ſerves: For, when he demands a Line to be produc'd *in infinitum*, the clear ſenſe of the Geometrician is to have it drawn out as far as is neceſſary for his work; which never does or can happen to require it actually infinite. Not an *infinite*, therefore, but an *indefinite Line* the Geometrician asks; that he may uſe any as big a part of it as he needs. In like manner, if he demands a Circle or ſtreight Line to be made; 'twere fond to think he expects them ſcor'd out Mathematically on Paper or Sand: Since the Demonſtration he intends is Univerſal and exiſts in the underſtanding only, not in Paper. It ſuffices therefore, that the accurateneſs of the Circle or Line be in his Mind, to which the paper yields a phantaſm; a weak one, indeed, but fit enough to delineate the rigorous form in his Mind. Some, too, will not allow a Line can be cut juſt in the middle. Nor do I deny this to be petty work of Geometry: But, neither do I

expect

expect the Scepticks ſhould be able to prove this impoſſible: And therefore, againſt a perfect Demonſtration, ſuch as *Euclid's* is, to liſten to ſlight-babling reaſons were to trifle, not philoſophize.

6. Is not this hugely remarkable, or rather to be admir'd? That thoſe things which advance Geometry, above other Sciences, in a great meaſure are falſe; taken for granted in order to uſe, but not credited for Science: For, Mathematick is not certainer or more evident than other Sciences; but eaſier and more adapted to fancy, not underſtanding. For, if in Geometry we were ſtill to uſe ſtrick Terms, and always to repeat *this Body, as long, abſtracting from its Latitude*, or, *as broad, abſtracting from its depth*, the whole diſcipline, loſing that inveiglement of clearneſs by which it tills on the reader, would be but tedious work. Now, becauſe we may uſe the names of *Points*, *Lines*, and *Superficies*, as they were Things; and, according to this groſs apprehenſion, make viſible Figures: Geometrical truths ſtrike almoſt our very corporeal Eyes. Whether as much may be done in other Sciences, at leaſt as to ſome part, is not yet clear; but, from the way of *Algebra*, it may be conjectur'd not utterly out of the reach of humane induſtry.

7. This, at leaſt, may paſſe for evident, from the manner we have expreſſed of the Geometrical contemplation: that the Geometricians uſe to draw their

their Conſequences and Poſitions, not from the ſounds of their words, but the Notions in their minds. But, herein kind Nature has been indulgent to thoſe Diſciplines; that they are excus'd from any neceſſity to reſolve the Equivocation of their terms: but having once explain'd them, they may, without any rub, proceed, whence we ſee that if at any time, they are put to explicate their words, Geometry grows even as troubleſom as Metaphyſick: as appears in that queſtion bandy'd concerning an *Angle of Contact*; becauſe they reflect not that an Angle ſpeaks a *Quantum*, whereas yet they confeſs it cannot exiſt without a ſpace. Plain then 'tis rendred that the firſt task in the other Sciences is, to make the queſtion clear between the oppoſite Parties, not only in Term, but alſo in meaning: and that this is the main fault of the weak Managers of other Sciences, that they ſtick obſtinately at uſing the words in a fore-received ſenſe, and that no clear one; nor can be bronght to an agreement about their explication.

8. It muſt be concluded, that, in Phyſick alſo and Metaphyſick, there's a capacity of infinite Demonſtrations, if induſtry be not wanting. For, who is ſo ſenſeleſſe as pertinaciouſly to deny, that a formal Sylogiſm may be made ev'n about the Subjects of theſe Sciences, or, when made, is of force? It muſt, therefore, be ſaid, either that the Diſcourſers in theſe Diſciplines cannot comprehend their own meaning, and

declare

declare what they feel in their mind when they pronounce such words: or else, that they may reduce them into a Sylogism and breed Science. Plain too, it is, that, in that part of Physick, which is truly call'd such, *viz.* that which treats of sensible Qualities, not so subject to obscurity through the equivocalness of the Terms, Demonstration will cost lesse pains: in Metaphysicks 'twill prove harder, because the Commoner the words are, the more they are subject to equivocation. But, on the other side, because, the Commoner the things treated are, the simpler are their Notions, and consequently, more evident the connexion of the terms: Demonstrations in Metaphysicks must needs be most evident and secure, and such as deserve the evidence of all other Sciences should depend on them.

Fourth Plea

Refells the Preliminary Objections.

1. NOw we must give ear to the Complaints, (shall I call them?) or rather Reproaches of the Scepticks: though themselves are no slight Causes of those ills which they object to the Lovers of Dogmatizing; who, whilst they even acknowledge it the entire work of a Man, and one minding his

buſineſſe too, to dilate the bounds of any Science; themſelves, purſuing mean ſtudies and the applauſe of a ſmooth-tongue, ſtrive, under pretence of impoſſibility, to avert from that Heroick thought the Scientifically-diſpos'd *Genius* of others. Yet, would they do even this but ſolidly, I ſhould think it pardonable: but, if they fall not on this neither in a legitimate way; how are they not to be exploded? Now, perhaps, the defects of miſ-ſeekers may be more; but Ile content my ſelf with the propoſal of three. Let the firſt be of thoſe who ſeek things incapable of Truth; or who, of that which has no being at all, enquire how it is or may be made: as if one ſhould require a Triangle, equal to an aſſign'd Circle, to be inſcrib'd in it. Let the ſecond be of thoſe, who complain that thoſe things are unknown, which, though true in themſelves, are yet, either, abſolutely, or at leaſt as yet, out of the reach of human power: as if one ſhould be angry that the Wars or Government of the Planetary Commonwealths (ſuppoſing thoſe Globes planted with Rational Creatures) are unknown to us. For, 'tis fondneſs to quarrel at our ignorance of ſuch things, for reaching the knowledge whereof Nature has afforded us no Ladder of Accidents. The laſt defect is of ſuch as lament thoſe things are unknown, which, by honeſt induſtry, may be ſearcht out, and will, if the ardour of inquiſition grow ripe. For, 'tis ignorance and importunity to allow no time for encreaſe of Sciences.

Amongſt theſe I reckon not thoſe *ſelf-tormentors*, who fret that thoſe things are unknown, which are publickly known to others, but unknown to them; becauſe, upon ſome extrinſecal prejudice, they neglect inquiring into what others have ſaid: which race of Men is, at this day, moſt frequent among the Courters of Science; but withall moſt inſufferable: For, what can be viler than to ſhut the eyes againſt things moſt manifeſt to the underſtanding; upon the Calumnies of ſuch as profeſs they know not theſe things which others conſtantly affirm are moſt evidently comprehended?

2. Let now the Complaints themſelves ſpeak, *viz.* Thoſe with which the *Contemner of advancing Dogmatically* has ſtuft his 3, 4, 5, and 6 Chapters: But, firſt lets examine thoſe things which he indulgingly reproaches. They are the two, as it were, acknowledged *Ne plus ultra's* of Philoſophers, *viz.* The Cauſes of *the Seas Ebbing and Flowing*, and of the Wonders of *the Load-ſtone*. Ile endeavour to look into them ſeverally. And, as to the firſt, though that may well be reckoned among the things whoſe Accidents are not-yet-enough comprehended by us; and therefore I might juſtly exact that they, who think it incomprehenſible, ſhould take care to have the *Phœnomena's* clear'd, and teach us, by juſt calculations of Seamen, what dayes, in the ſeveral Regions, the Seas Ebbs and Flows happen: Otherwiſe, I may de-

deſervedly lay the blame on induſtry, and excuſe Philoſophy: Yet I will not proceed ſo rigorouſly with a courteous Adverſary; but argue, that Theſe things may be convinced concerning this viciſſitude of the Sea: That the motion is caus'd by an extrinſecal Mover: That that is no other than the winde: That what rules the windes is but various aſpects of the Sun and Moon to the divers Climates of the Earth. Which, if they be true, if evident from the *Phœnomena*'s; what remains, but that the *Phœnomena*'s be more acurately traced; and the ignorance of particulars laid to the charge of Induſtry, not of Art: and ſo Philoſophy ſcape ſcot-free?

3. Lets run over our Propoſals one by one. The firſt is that the Seas motion is from ſomething extrinſecal, or without it. This is Demonſtrated by *Ariſtotle* in his Books of *Phyſicks*; as they who have ſtudyed him know: The *Dialogues*, too, *De Mundo* have made this ſome part of their pains; and, if a proper place for it occurs in this Treatiſe, I ſhall not be loath of my labour to explicate the ſame again: here this propoſition is to be aſſum'd, not prov'd. That the Author of this motion is the winde comprehends more than one thing, *viz.* That the winde is a ſufficient ſtirrer of the Sea; and that it, in particular, concurs to this motion call'd the *Flux*. As to the firſt part, (not to mention how many Deluges or overflowings of the Sea have infeſted the Coaſts by the windes help), we need

not travel beyond the *Thames*; in which, almoſt every Winter, the Flood happens, ſometimes more than once in a day, to be beaten back or pour in more abundantly than ordinary, to the overflowing the Streets in the Subburbs of *London*. That, again, the Winde cauſes this courſe of the Tydes, beſides the neceſſity which the perpetual Weſt-Winde, flowing from the *Atlantick* Sea to the *Eaſt-Indies*, carries with it; the Six-months ſtrong Currents, which take their turns conſtantly backward and forward between *Africa* and *America*, conformable to the Windes always keeping the viciſſitude there, are a manifeſt teſtimony. Add to theſe, that, through the whole Coaſt of *China*, certain Tempeſts, with moſt vehement Rains and overflowings of Rivers, are daily expected at the New and Full Moons; whence the variation of the Fluxes at the ſame juſt periods is encreaſed. Now, that the Windes and Rains and riſing of Storms depend from the Sun and Moon is ſo notorious that 'tis paſt conteſt. Theſe things, then being clear; the cauſes of *Ebbing and Flowing* cannot be obſcure: though the certain Compaſſes they fetch be unknown, becauſe the obſervations of them are not-yet exactly calculated.

4. Nor is the *Magnetical Philoſophy* leſs evident, if we'l have but patience to look into't by piecemale. For, it cannot be doubted, from the ſudden turning of Iron-tools fit for the purpoſe, and other Bodies

Bodies apt for Magnetical direction; but that power of Direction, which we call Magnetical, is attaind by a flux of unperceivable Atoms deriv'd from one Body into another: And as little, that becauſe a perpendicular or horizontally-ſidelong poſition of the Magnetical body is apt to beget in it that vertue; the primarily Magnetical body is the Earth we tread on, or at leaſt the cruſt of it next us. Nor, again, is it queſtionable, from the perpetual Motion of corruption and generation of this Magnetical vertue in thoſe bodies; but there is a certain perpetual flux of Atoms upwards and downwards, as alſo between the Equator and the Poles; whereby this vertue is infus'd and fed. Neither, again, will any ſtick at it, that the Magnetical Body, if it be ſet at full liberty, muſt be carry'd according to the flux of the like Atoms; as that which ſwims in a River follows the violence of the ſtream: and conſequently, the declination, too, or variation of the Needle point out the Channel of the Earth's Atoms, which are proper to it. All which if we ſolidly remark, and purſue with a ſteddy diſcourſe; I ſee not what great Miſtery lies in this Magnetical vertue and operation, beyond poſſibility of bringing clearly to light. Theſe ſecrets, therefore, of nature were, heretofore, like the head of *Nilus*, undiſcover'd; but now, themſelves atteſt not the defect but proficiency of Science. Theſe then thus touch'd on, let us fall to the Objections themſelves.

Fifth

Fifth Plea

Refells our Ignorance of the Soul and Senſation.

1. IN the third Chapter, therefore, of his moſt eloquent Diſcourſe, he objects our ignorance of that thing we ought to be beſt acquainted with, *viz.* Our own ſouls. Concerning which, what a kind of thing 'tis in this our earthly habitation, he neither teaches nor enquires at all, as far as I can diſcern; only that it *is*, he aſſerts, may be moſt clearly gathered from its effects; but, to ask *what it is*, he ſaies is like the miſtake of Infants, that look behind the Glaſs for the Body whoſe *ſuperficies* they ſaw painted on its foreſide. And, in my judgment, he had ſaid rarely, had he ſtopt here: but in his following *Queſtions*, he ſhews his deficiency even in this. For, he asks farther, whence the Soul comes? and how 'tis united to the Body? He is therefore moſt manifeſtly detected, to think that the Soul, lying hid in the Body, is of it ſelf a certain ſubſtance, which may directly be made, come, and be joined to another thing: whence he terms it *ſubſiſtence*, which doubtleſs denotes a *Thing* and *Subſtance*. Now, that this is a moſt important error in Philoſophy none can doubt, that's able to diſcern the oppoſition of *One* and *Many*. For, 'tis plain, that either

a Man is not *a Thing*; or elſe that his *Soul* and *Body* are not *two Things*; if one thing cannot at once be many, nor many one. Nor am I ſcar'd with the diſtinction (which the Boys that gabble Philoſophy have always ready in their Budget) of a *perfect* and *imperfect* thing: which ſaies juſt nothing, unleſs *imperfect* ſignifie to which ſomewhat is wanting to make it a thing; which ſuppos'd, an imperfect thing is not a thing, and the diſtinction vaniſhes. Otherwiſe, the ſame cannot be one thing and more things: Wherefore either a Man is not a Thing, but a Pair of Things conſiſting of an Intelligence and a Beaſt; or his Soul and Body are not two things.

2. When, therefore, he asks, Whence comes the Soul? it muſt be anſwered with a queſtion, Whether he doubts whence the man comes? For, if whilſt the man lives, there be but one only thing which is call'd the *Man*, 'tis he alone can have come; and he beats the wind that enquires whence the Soul comes? Nor am I ſhaken with the *Authority* of our Fore-fathers, though never ſo Reverend: I mean not of thoſe who profeſs themſelvs unable to grapple with the Queſtion; for theſe deliver the Candle into the hands of Poſterity, adviſing them to purſue on the ſame Race, that it may be ſeen whether any thing purer occur to them than to themſelves, ready to Patronize whoever ſhall clear the Truth. But their oppoſition I reſiſt, who clamor 'tis the Faith of all Churches that Rational Souls are fram'd by God. For, now I'm accuſtom'd to it, to diſtinguiſh

ſtinguiſh between what's due to the ſincerity of Faith, and what to Scholaſtical ſubtilty. If I attribute the Making of Man, as he's Intellectual, to the ſingular power and operation of God, I have ſubmitted my ſelf to the keys of the Churches Doctrine, and ſubſcrib'd to the Tradition of the Saints. But, whether that action, which is the Generation of Man, conſiſts of two actual parts, or be but one alone, by more notions equivalent to more really-diſtinct actions, is a purely ſpeculative Queſtion belonging to the Schools. And ſo it muſt be ſaid that one Thing, a Man, equivalent to a Beaſt and an Intelligence, is brought into exiſtence, by one action, equivalent to two, the Generation of an Animal and the Creation of an Intelligence.

3. By this truth we are led to the evident ſolution of the two following knots; the econd being how the Body and Soul are united? Which, 'tis plain, is herein faulty, that it ſuppoſes two things *to be united exiſting* either before the Compound, or not deſtroyd but ty'd together in it: which is clearly falſe, not only out of the 'fore-declared Truth, but alſo out the definition of a Part. For, Parts are call'd ſuch, whereof, by a Motion, call'd Compoſition, one thing is made; or into which, what was one is reſolv'd by Diviſion, or deſtruction of the Unity. Now, Unity, not Union, is the form of what is One: And, in that which is One, to ſeek for the colligation or cement,

cement, is to ſeek by what the ſame is made the ſame. The ſame Error runs through the following Difficulty, which laments that 'tis unknown how the ſoul moves the Body: Which is utterly knock'd on the head, by denying the ſoul moves the Body. For, true it is, that one animated Member moves another; but not, that any ſubſtance, which is a pure ſoul, moves immediately any Member in which the ſoul is not. I appeal to other Animals, in which there's frankly denied to be a Soul independent of the Body: and I deſire to have ſhewn me what motion there is in man, which is not in them. I confeſs freely, that one Member, the Brain eſpecially, moves the reſt after another manner in Man, than in other Animals; and this by reaſon of the difference in their Souls: but firſt it ought to be made evident by experiments, that a Humane Soul, without the help of the Body, or ſome Member acting together with it, moves another Member; before we are to enquire into the manner how this either is or can be done.

4. The laſt darkneſs which he bemoans in this Chapter lyes in our ignorance of that Motion, whereby the ſpirits are deriv'd out of the brain into the fit Nerves for the Animal's natural Action. And, if indeed the Objection brandiſh an Argument common to all Animals, I ſhould ſoon quit the field: for I confeſs my ſelf not ſo skilful in Anatomy, that I can lay before the eyes, why, from the Motion of Anger boyling

in the heart, the ſpirits ſhould ſtart into thoſe Muſcles, by whoſe ſtreining the Animal is carry'd towards its Adverſaries; and, from the Motion of Fear, ſpirits flow into the oppoſite Muſcles, by which the Animal flies fromwards them; whereas they, in a manner, add ſtrength to and enforce both alike. Yet, I make no queſtion at all but, by force of the Brain's Motion, caus'd by the motion of the heart, it comes to paſs that the entrance into one ſort of Channels are ſhut, others opn'd, and that thence comes this admirable and as-yet-not-ſufficiently-ſeen-through direction of the ſpirits. But, the Authors ſeems to make Mans caſe proper to himſelf; alledging Will, and perhaps Election, to be, as it were, the firſt Author of this direction. Still,therefore,he ſlips into the ſame Error. For,firſt, he ſhould demonſtrate ſome act of the will, without ſome either precedent or concomitant Motion of the Heart, (which, when tis violent, we call *Paſſion*; when we endeavour at any thing, *Deſire* or *Flight*, or ſome other ſuch like we ſtile it): But, if there be no ſuch, then the cauſe of this direction is purely Mechanical,as he calls it,and not any certain inexplicable power. Now, that there cannot poſſibly be any ſuch exempt act of the will, 'tis clear enough to them who allow ther's no knowledge without a beat of Phanſies: For, Phanſies cannot chuſe but both be ſtird themſelves and ſtir others, by the uſual ways of Nature. By Motions, therefore, deriv'd from the heart, whether in Man

Man or in Animals, all Motions, whether Natural or Free, Univerſally are perform'd: and, by conſequence, are ſubject to the contemplation and ſcrutiny of Philoſophy and acurate Mechanicks.

5. The fourth Chapter objects that the Natures of *Senſation* and *Memory* are inexplicable. As to the former, firſt he acknowledges the ſubſtance of ſenſation is ſeated in the Brain alone: Then he inclines to *Des Cartes's* fantaſtical conjecture, ſhall I call it, or deviation from the manifeſt footſteps of Nature; about Motion's being brought down from the Heav'ns to our Eyes, through the continuedneſs of a very thin *Ether*: But, becauſe he eſteems *Ariſtotle's* conceits, too, not incredible, I may be excus'd from that ſpeculation. At length, therefore, he falls again into the old Error, enquiring how corporeal things can have any force upon a naked Spirit? He ſuppoſes therefore, the Soul in the Body to be a kind of *thing*, not the form or affection of the thing, *Man*; and ſo, is upon the ſame falſe haunt again, nor needs repeating former diſcourſes to beat him off it. But, leſt he ſhould ſay nothing new, he objects that, by ſenſe alone; there's no diſcerning the Quantities, Diſtances, Figures and Colours of things. I wonder, I muſt confeſs, at theſe Objections from a curious and ingenious Man; things ſo clearly explain'd & demonſtrated in *Opticks*. Who is ſo ignorant, that he knows not that bigger things, at the ſame diſtance, ſtrike the eye in a more

obtuſe Angle and ſtronglier? Who knows not that Figure, if plain, as objected to the eye, is nothing elſe but *Quantity* more ſpacious or contracted this or that way? but, if it be a ſolid one and participate of the third dimenſion, it borrows its variety from Diſtance. Again, that Diſtance is nothing elſe, but a certain Magnitude ſpread between the Eye and the Object; which if it be paſt judging of, neither can the Eye atteſt the diſtance. Laſtly, that Colour is nothing elſe, but the confuſed figuration of a *Superficies*, according to its parts undiſtinguiſht to ſenſe. Whence it remains clear, that the Eye needs no other *Geometry* for all theſe, than what is neceſſary to judge of a magnitude from the variety of an Angle.

6. His next pains is about *Memory*. To ſhew the explication of that impoſſible, he commemorates and rejects four waies of reſolving it. I muſt take another path than any of thoſe. Firſt, I muſt weaken this conſequence, that *If any thing about Memory has not hitherto been explicated, we muſt therefore make account it never will be*, or that *'tis impoſſible to be explicated.* We muſt be aware too, that alwaies ſome things will be unknown; either becauſe their trivialneſs merits not the pains of learning them; or in that at length the bulk of things known will be grown ſo great, that more will be burthenſome to the underſtanding. Now, to complain of ſuch like is to have forgot human ſhortneſs. What, therefore, ſeems my task in this

Queſtion

Queſton is, to bring into play thoſe things which are already eſtabliſht and evident about memory; and, for thoſe that are unknown to make an eſtimate whether, ſome time or other, they too will come or merit to be known. Firſt, then 'tis evident, we muſt diſtinguiſh what is *Memory* and what *Remembrance*. For, *Memory* is only a Conſerving of the impreſſions made by the objects, whereby the Animal is rendred able to uſe them when he liſts or needs. But, *Remembrance* is a certain Motion whereby that power of uſing the impreſſions is reduc'd into Act and Uſe. Concerning Memory, therefore, a reaſon is to be given both of its ſtation or reſt, and of the cauſes or manner of its Motion: and of both, if I be not miſtaken, Nature and Experience offer evident footſteps, for tracing them.

7. In the firſt place, that all things that move the ſenſe have certain minute particles of their body ſhorn off; as to the Touch, Taſt and Smell, is too notorious to abide conteſt. He that denyes the ſame force to the Light, returning from the things to our Eyes, muſt deny, too, that the Sun extracts exhalations from the Earth and Sea: there being no other diverſity in the operations, but that the one is greater and ſtronger, the other weaker and leſs. Now that theſe Atoms get up to the Brain, by the waſtage of the Spirits, (that is, a certain liquid and moſt ſubtil ſubſtance) can ſcarce be denied by one never ſo pieviſh, that's but

put

put in minde how Waters and Oyles are impregnated. Theſe Atoms, therefore, muſt of neceſſity ſtrike, not without ſome violence, upon that part of the Brain, whoſe being-ſtruck cauſes perception. Again, that a ſtream or any thing liquid daſht againſt a reſiſter ſhould not leap back again is moſt clearly repugnant, both to experience and reaſon. And, that a ſubſtance any thing viſcuous, in a viſcuous veſſel beſides (ſuch as thoſe are about the brain) being repuls'd, ſhould not ſtick to any thing ſolid is equally impoſſible: as alſo, that a notable part of that ſtream ſhould not cling together, is againſt the Nature of gluyneſs. The Walls therefore, of the empty and hollow places of the Brain muſt of neceſſity be all hang'd and furniſht with little threads. Conclude we, then, that through all the ſenſes, except Hearing, the Animal is enabled, by Atoms conſtantly ſticking in it, to make uſe again of the Impreſſions made by Objects. In fine, ſince ſound is made by a colliſion of the Air; 'tis evident by Anatomy, that it drives the Hammer of the Ear to beat upon the Anvil, by which beat 'tis not to be believ'd but certain particles muſt fly off and ſtrike the Fancy: the orderly ſtoring up, therefore, of theſe is apt to conſtitute the Memory of ſounds. The ſtructure, then, of *Memory* (if I am not miſtaken) is rationally enough declared.

8. I cannot ſee why the like track may not carry us to the explaining of the Symptoms of *Remembrance* too;

too; or why their Solution ſhould be deſparate. For, there's nothing clearer than that the fore-explicated motion of the Atoms is ſet on work by a wind, as it were. For, that *Paſſion* is a certain ebullition of Spirits reeking out of the heart, tis viſible even to the eies, in Anger, and Love, and Baſhfulneſs. If we make inquiſition what effect theſe motions have on the Fancy, we experience, that thoſe Objects occur to the mind, tumultuouſly and all on a heap, as it were, which ſolicite theſe Paſſions; ſo haſtily and in a huddle, that they prevent mature weighing. It appears, therefore, that the Atoms, rouz'd from their places by ſuch like vapours, fly about the cognoſcitive part, in a kind of confuſed tumble. If then, there are certain winds and blaſts, which we call Motions of the appetitive faculty: is it not plain, that the cavities of the Brain will be bruſht, as it were, and the Images ſticking to the wals be moved to the place deſtin'd for attaining their effect? And that theſe Atoms are carried neither meerly by chance, nor yet in a certain order, is evident by this; that, upon inquiſition, the things we ſeek for do not ſuddenly and perfectly occur; which were a ſign of election; and yet manifeſtly, ſuch abundance of them ſuit to our purpoſe, that tis clear, they could not run thus without any induſtry at all. As, therefore, when we treated of directing the Spirits into the Nerves, we allowed the ſeveral Paſſions each their waies into certain parts of the Brain: ſo, here, tis alſo manifeſt

manifeſt, the ſame Paſſions have the places and *ſeries* of ſome certain Atoms, in a manner more obvious to them, than others.

9. But our new admirer of Nature is perplext, how this multitude of Objects, ſwimming in the cavities of the Brain, ſhould poſſibly be, without entangling and confounding one another: and by what Art they ſhift out of one anothers way, ſo as to be able to keep humane knowledge diſtinct. And here, I muſt confeſs, I had need crave the help of a *Machine*: for, really, we have no Candle, nor Spectacles enabling us to look into the ſubtile paths by which the Atoms avoid and ſlip by, to eſcape ruining one another by ſhocking. But, in exchange, I ask how many Sunbeams (which Philoſophy now queſtions not to be Bodies) pierce ſtreight to our eies, through the vaſt continuity of Air, and ſo many little Bodies flying up and down in it? There's no body, if we credit Experience and Reaſon, without its ſteams, and a ſphere of vapours derived from it: How do theſe ſteams find free paths to run in and attain ſuch wonderful effects? The Magnetical, Sympathetical, and ſmell-producing ſtreams, have not their courſes broken, or ends intercepted by one another. They that have not the confidence to deny theſe, why are they loath to allow the ſame may happen in the wide paſſages of the Brain? But you'l reply, that to multiply a difficulty is not to ſalve it; but to profeſs the reſt of Nature inſcrutable, when

when tis our task to clear this particular. Well then, thus I cut the very knot aſunder: In currents of greater Atoms, where tis eaſier to make experiment, tis plain, that many are confounded, many loſt; yet, out of the very nature of Multitude, that ſome are preſerved entire, and thoſe enough to ſerve Nature's turn. So it paſſes even in the Brain: whatever Object enters requires time for affecting the Senſe; which, if it be too ſhort, the Object is loſt almoſt before it be perceiv'd; if long, it roots in the knowledge by the multiplicity of the images, and the frequent ſight of the ſame Object does as much; nay, that knowledge often repeated, works the ſame effect, is evident beyond diſpute. This being ſo, we muſt conclude, that ſuch is the art of Nature as, for things to be remembred, there ſhall not want that abundance of images, which is neceſſary and ſufficient to force their way through the Crowd of all others they meet.

10. 'Tis plain that, in this Anſwer, I have prefer'd the *Digbæan Method* before the reſt: Becauſe *that*, as neer as is poſſible, traces Nature ſtep by ſtep. I concern not my ſelf in the reſt; as ſtudying Philoſophy, out of a deſign to build, not deſtroy. Only, I'd remember the ingenious Author that he miſ-impoſes the third opinion (which reliſhes nothing of Philoſophy) upon *Ariſtotle* (who taught the *Digbæan way*); deceiv'd by the counterfeit ſtilers of themſelves *Ariſtotelians*, whereas they are nothingleſs. In this ſame Chapter, the Author ſeems ſollici-

tous about the will's following the underſtanding: But, becauſe, he diſputes nothing on't, neither will I; only, hint that the will, as ſpiritual, ſignifies not any thing elſe, but the very underſtanding perfect, or ripe for action to follow out of it. That Myſtery of *whence comes ill*, I deny not, has bin brought down, by the conteſts of the Ancients, even to our ears; nor queſtion I but 'twill laſt as long as the bold and ignorant ſhall endure: But, as the Author miſ-inſinuates, I doubt not that St. *Auguſtine* himſelf has moſt clearly convinc'd it; nor can it any longer be troubleſome to any, but thoſe who either know not, or neglect his Doctrine.

Sixth Plea

Diſplaies the Paſtick vertue, Continuity, Adheſion of Parts, and the Myſteries of Rolling.

1. IN his fifth Chapter he falls upon the obſcurity of the formation of natural Bodies, eſpeceially living ones: Yet, not ſo ſmartly but that what he ſays may, with eaſe enough be repuls'd. I ſay, then, that there are two Methods, by which the formation of living Creatures may be rendred intelligible; without any farther difficulty than what may, without a Miracle, be

be refunded into the Wiſdome of our Maker. Conceive the firſt, thus: Let's ſay the ſeed of a Plant or Animal conteins inviſible parts of all the Animals Members: Theſe, lets ſay, ſupply'd with moiſture, encreaſe, with ſome ſlight Mutation, whereof the reaſon may be eaſily rendred (for example, that ſome parts dryer and harder, others are more throughly water'd and grow ſoft); and what great matter will be apprehended in the formation of living things? The other Method is, that, obſerving the progreſs in Chymicks, which muſt of neceſſity hold the very ſame in Nature if ſelf, we'd ſee that things concocted with a Gentle fire reſult into three more remarkable parts: A kind of thin and, as it were, fiery one, though condenſablein to the *Species* of Water; another Oily and anſwerable to Air; a third expreſſing the Nature of Salt and, as it were, hardned water; with all which ther's mingled and lyes at the bottom a fourth, that's dry and of an Earthy quality, however they call it. The ſame we ought to expect from Nature; ſince the acting of Heat upon Moiſture is the End of both Fornaces. This laid for a ground, ſuppoſe, in a proper veſſel, a Drop of prepared Liquor, ſo kept warm and preſerv'd that it may be encreas'd, too; is it not plain that, by the very action, ſome parts will become dryer, others more ſubtil and liquid? And that the dryer will grow into different figures? Eſpecially into certain hollow Veſſels; if, by the beats of the boyling

moiſture, they be extended and thruſt out in length? And that all of them will cling together, where they begin firſt to divide? And ſee you not now the figure of the Animal and its reſpectively homogeneous parts form'd? And that their connexion and variety, and its other heterogeneous parts follow the variety of either the Fire or Liquor.

2. He that ſhall comprehend theſe things well, will not lament that the Plaſtick vertue is an empty name and a word without a thing. But, if he be ingenious and conveniently at leiſure, he'l either, in ſpring time cloſe-obſerve the breeding Plants in Gardens or the Fields; or at home pluck up Seeds buried in Pots, juſt while they are taking life; and daily rake into the bowels of Berries and Seeds: and I dare promiſe him ſo manifeſtly connected ſteps of advance, that, after many experiments, he ſhall fore-tel, meerly out of what he ſees the day before, what will be the next days iſſue. Thoſe things which appear wonderful confuſedly in the whole, taken aſunder diſcover and fairly offer themſelves to view. If one obſerve the ſpreading of figures or Colours, he ſhall find the principles of theſe founded in the nature of Juice; the reaſons of thoſe chalk'd out by ſome manner of their production: for both Fruits and even ſlips are, by art, variable into any kind of forms. Much more the figures of different ſalts or concret Juices ſpring, not from any intrinſecal nature, but from

from their uſual generation and the diffidulty or facilneſs of their place and Motions. Nor let any be fear'd by the talk of Artiſts, that admire and amplifie thoſe things whoſe cauſes they underſtand not: or of our Authour, amaz'd at the conſtancy of natural operations; why our Hens ſhould never be colour'd like Peacocks-tails or Parrats. For, in different Regions, great varieties ſpring from the diverſity of Food and Air: And, for what is out of our reach about theſe things, we muſt be beholden to time.

3. In the ſame Chapter he raiſes two other Queſtions, which he thinks abſolutely inexplicable: to me, on the other ſide, they ſeem to have ſcarce any difficulty in them. The later in Him is concerning the Compoſition of Bulk or *Continuum*: A queſtion both debated by the Antients and deſperate to the Modern's. The former, though the later in Nature, is concerning the ſticking together of parts, or, why one Body is more diviſible, another leſs. The former queſtion ſuppoſes another, whether there be parts actually in a *Continuum*, whereof the affirmative ſide, though they wrangle in words, yet is commonly taken by the Modern's, as it were a ſelf-or-ſenſibly-known truth; but, by the whole School of the antient *Peripatetick*s and that of the *Thomiſts* following them, hiſt out, as demonſtratively convicted. The iſſue of the matter is that, about the Compoſition of Bulk, the Moderns, after a world of laborious trifling, confeſs Philoſophy at a ſtand: The

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Peripateticks deride them as groping in the dark. For, if there be no parts til they are made by diviſion; they are manifeſtly out of their wits that ſeek how thoſe ſhould be united which are-not at all? The arguments of thoſe that aſſert *actual parts* cite even ſenſe; concerning which ther's nothing certainer than that it cannot diſcern any *part* in a Bulk; ſince the term of each *part* is inviſible, whereas ſence requires a notable quantity to judge of. Their other Arguments commonly aſſume our manner of ſpeaking, and end in Logical trifles, how we ought to ſpeak, not what the thing it ſelf has really in it. Now, this no-very-difficult conteſt being decided, all the controverſie concerning the compoſition of Bulk is over.

4. About the other queſtion there's even as wiſe work. The followers of *Democritus* ſtrive to reſolve it into hooks and corner'd hold-faſts: Not ſeeing, that nothing can be imagin'd ſo one, or an Atom, as that it ſelf is not compos'd of many parts, concerning which it muſt be ask'd how they come to ſtick ſo faſt together? But, this difficulty they, at leaſt, ſlip over, aſſerting that theſe in minuteſt Bodies, by force of Nature, reſiſt whatever diviſive power, not ſo the Compounds of them: That is, the greateſt and invincible coherence of parts they careleſly aſcribe to the force and quality of Nature, and are narrowly inquiſitive about a leſs. The firſt reſolution, therefore, 'tis plain, is refunded into Nature it ſelf, and the diviſion of Body

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or Bulk into Rare and Denſe, or having More and Leſs of Quantity in equality of Bulk. Which Differences moſt Demonſtrably dividing the Notion of *Quantitative* and conſtituting more *Species* of it in things; there remains no greater Difficulty in the Adheſion of the parts of the ſame *Continuum*, than whether there be any ſuch thing or not: For, if there be any, by its *very being a Continuum*, of neceſſicity it muſt be whereof parts *may be* made, not wherein parts *are*; elſe (as we have preſs'd above) the ſame thing would be one and many, divided and not-divided, in the ſame Notion. Therefore 'tis that ſubſtance, from its very Quantity, whence it has its reſolvableneſs into parts, has alſo its eaſier or harder reſolvableneſs, which they call its parts more or leſs ſticking to one another. But, as ſoon as ever the ſpeculation is ſtrein'd up to Intellectual Notions, theſe Naturaliſts's ſtomack turns: as if Philoſophy enjoyn'd us not to know our own thoughts, and made it unlawful to underſtand what we ſpeak.

5. His Sixth Chapter is all dedicated to the Motion of *Wheels*; nor, if we believe an Author that wants for no wit, is it any ways ſolvable. But, before he attaques that fatal Difficulty, he objects a certain previous one to us, which the Antients object to *Ariſtotle*; but he, I confeſs, in a clearer form. For, he conſiders a Wheel mov'd about its Center, and plainly concludes that no part of it moves; but the whole is mov'd, and the ſeveral parts together change place.

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But, what inconvenience this concluſion drags along with it, I am utterly ignorant: For, though he ſtrives to reduce at large, that one part firſt quits the place before another is in it; yet evidently the words, not the thing, breeds all the conteſt: For, what hinders that, altogether and at-once, both the quitter ſhould firſt not-be and the ſucceeder firſt be in the ſame place? Another ſolution might be given, did the Argument exact it: But, as I ſaid, the quarrel is about the words and manner of ſpeaking, not the thing. The Author ſubjoyns a ſecond difficulty, how, in a Wheel turn'd about, the parts nearer the Center, in the ſame time, come to run over ſo little a ſpace; whereas they are connected with the remoter, which fetch ſo large a Compaſs? And, after he has acknowledged it to ariſe from hence, becauſe they are not carry'd alike ſwiftly; he infers that, if the ſwiftneſs of the Motions be unequal, the ſtraight line drawn from the Center to the Circumference muſt be crook'd: Whereas 'tis moſt evident, the right line would be crook'd, if the nearer and diſtanter parts from the Center were carry'd with equal velocity.

6. At length the Author loftily enters upon his boaſted experiment, profeſſing before hand, hee'l ſtop the mouth of the boldeſt obſtinancy. Thus he propoſes it. Let one Axle-tree have three Wheels on it, one at each end, both alike, and a third in the Middle far leſs. Let the bigger reſt upon the floor, the leſſer upon

upon ſome table. Let them all be drawn in a progreſſive Motion, till, having fetch'd a full compaſs, they mark the floor and the table with the very ſame points, in which, at firſt, they reſted on them. The three ſcor'd lines will be found equal; whereas the middle one is ſcor'd out by the contact of a Circle far leſs than the other two, yet 'tis as long as them: Which, with no likely-hood, can be deny'd impoſſible; ſince, 'tis clear, things that touch, as far as they do ſo, are, neceſſarily equal. This is the knot; this the evident repugnancy. But, alas! let's obſerve that Motion is call'd in to help tye the knot the harder; and that the motion is of two kinds, a Right and a Circular, compounding a third progreſſive motion of the Wheel. Obſerve we farther, that the Right (or ſtreight) Motion of the three Wheels is equal; and that the Circular Motion of the great Wheels is equal to the Right Motion; but the Circular motion of the Middle little Wheel is leſs than the Right Motion: And, which follows, that the greater Wheels are mov'd with the ſame celerity according to both motions; but the leſſer is mov'd ſtronglyer in the Right, than in the Circular. Now, the compounded Motion is not that which is ſcor'd upon the floor or table, which, 'tis clear, is a ſimple and purely Right one; but a certain crooked Motion in the Air, making, with the ſcored Motion, a certain *Area* (whoſe quantity, *Torricellus* has demonſtrated): as is manifeſt beyond diſ-

pute to whoever but takes any one point of the Circle or Wheel; and withall, that the progreſſive Motion of the bigger Wheels is greater than that of the leſſer Wheel. Theſe things thus explicated, there appears nothing in this objection more intricate, than in this ſimple Propoſition, that *of two bodies, which are carryed according to one line with equal velocity, one may, at the ſame time, be carried ſwiftlyer than the other, according to another line:* which is ſo evident, that any one, that's a Mathematician, cannot doubt of it.

7. Yet ſtill *Galilæus* preſſes cloſer that, in the circumvolution, the ſeveral points of the leſſer Circle or Wheel are juſt fitted, in an immediate ſucceſſion, to the ſeveral points of the ſpace in which 'tis carried: And, therefore, that it cannot be underſtood how the Right can be longer than the Crooked. But, that which deceived *Galilæus* was his not having diſcuſſed *Ariſtotle* himſelf, but bin overcredulous to his Modern Interpreters, or rather Corrupters. For, *Ariſtotle* has taught us that a Moveable, in actual Motion, alwaies poſſeſſes a bigger (and not-equal) place to it ſelf; which is moſt evident: For, ſince no part of Motion can be but in Time; and, in every part of time, the thing moved quits ſome place and gets ſome new; 'tis plain, there cannot be found any ſo little motion, wherein the Body moved, has not poſſeſſed both the place in which it had reſted, and ſome part of a New one.

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This ſuppoſed, though the Moveable were conceived indiviſible; yet certain it would be that, in whatever determinate part of time, or by however little a part of Motion, it would ſcore out not a ſpace equal to it ſelf, but ſome line; and, in the conditions of our preſent diſpute every point of the leſſer Wheel will draw a line proportionate to a part of the Circle of the greater Wheel. And, ſince really there are no either inſtants in Time, or indiviſibles in Motion, or Points in a Circular Line: 'Tis evident, this Argument has no force; but in vertue of that falſe apprehenſion which we have convinced in the 'fore-alledged defence of Geometry.

Seventh Plea

Inquires after the Cauſes of our Modern Shortneſs in Science.

1. IN ſome of the following Chapters he, exquiſitely enough, ſearches into the Cauſes of Errors and human Ignorance: Yet, me-thinks, I could ſuggeſt two which he has over-ſlipt. One is the Lazineſs or rather Vanity of this Age: For, whoever has got himſelf but talk enough to weave a learned ſtory amongſt the ignorant or half-learned, ſuch as underſtandings unaccoſtomed to Sciences are apt to be dazled with: partly out of irkſomneſs to purſue harder things,

partly out of confidence of his own wit, he ſlights deſcending into thoſe Mines whence our Anceſtors have dig'd out Science; and to take thoſe pains himſelf which alone Wiſdom regards and follows. Let this Author be my witneſs; who, about the end of his former Chapter, complains of the Obſcurity of our Speculations concerning *Motion*, *Gravity*, *Light*, *Colours*, *Sight*, *Sound*; all which the *Digbæan Philoſophy* makes as clear as day: Whence alſo (though there they are more copiouſly and clearly explicated) we have borrowed our Diſcourſes of the *Load-Stone*, the *derivation of the Spirits into the Members*, the *Memory and Remembrance*, the *Formation of living Creatures*, and whatever almoſt we have alledged for ſolving the propoſed Difficulties: the very dictates of Nature leading us the way. Such like Philoſophers, therefore, read the eminent and highly elaborate Works of others, as if they were *Romances* invented for pleaſure, or as *Spectators* behold a *Comedy*: what on the ſudden takes them they commend; if any thing more knotty than ordinary occurs, they either out of *lazineſs* let it paſs unregarded, or break ſome bitter jeſt on't.

2. Another cauſe of *Ignorance*, wav'd by our *Author*, appears to me to be a certain ſpecial *Error* in the nature of *Demonſtration*. For, they feign to themſelvs a certain *Idea* of *Demonſtration*, which ſhould not only have this force on the *Underſtanding*, to render the Truth pro-

propos'd evident; but, ſo, beſides, that no objection can with any likelihood be oppos'd againſt it. Which is as much as if they ſhould require this *Demonſtration* to clear whatever follows out of, or any way relates to it; or, that one Demonſtration ſhould be a kind of entire *Science*. For, otherwiſe, how is it poſſible but oppoſition may be rais'd againſt this, out of things not-yet ſeen-through and conjoin'd with this Truth? An Underſtanding then, adapted to Sciences, out of very Principles and what it already knows, is ſecure of a deduced Truth: nor fears any thing can be infer'd oppoſite to the Truth it knows; whatever pains it may coſt to get out of ſtreights. For, it knows, that thoſe things are certain, which the *Underſtanding*, out of a ſteddy ſight that *a Thing* is *a Thing*, or that *the ſame* is *the ſame*, has fixt to and in it ſelf: and patiently waits till the diſtinction between the entanglements ſhew it ſelf, and the confuſion vaniſh.

3. In that theſe Contemners of *Sciences* endeavour not at fixing any thing in themſelves by a ſevere contemplation of Truth: as ſoon as any Truth pretends but to evidence, as if they were incapable of owning it, they quit their ſtation, and betake themſelves to enquiring whether any one has oppos'd that ſame: and if they find Impugners, they aſſume it for moſt evident, that ſuch a Truth is not evident. For, ſay they, were it evident, 'twould be ſo to all; 'twould convince every underſtanding. But, they may juſt as well ſay,

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the Sun is not visible, because tis not seen by them who turn their backs on't, or keep their eies shut. For, as in corporeal sight, some corporeal motion is necessary, by which the Ball of the Eye may be set against the Object: no less to see and fix in the mind this very evidence, that the same cannot be and not-be at once, a certain Application, and as it were, opening of the mind is required; even to conceive and give birth to the very evidentest evidence. And, for want of this, so many of the *Ancients* and *Moderns* have not own'd, but corrupted, the evidence of that very first and most notorious Principle. Whence they can never attain that Scientifical Method which shines so clear in *Arithmetick* and *Geometry*, but are wholly entangled in *Logical* and *Equivocal* trifles; and fill babbling Volumes with fopperies. Let these lusty Compilers of Tomes shew the world but one leaf, or one page deduc'd, or, at least, attempted in a Geometrical Method; and then, let them complain there's no *Science*, or that it lies hid in an unfathomable Well: now the sordid Sluggards, only mettlesome at repaoaches, conceit a Lion in the way, and stir not a foot, so much as to behold the very way.

Eighth Plea

Wards off from Ariſtotle *the Calumny of ſpecial Impiety.*

1. AND now I ſeem at an end of the Task ſet me: did not the ſame perſons ſtrein, as enviouſly as poſſible, to defame *Ariſtotle*, with all manner of *Contumelies*; that the ignominy of that one man may make way for them to tear *Science* it ſelf out of the hands of the Learned, and throw it into the dirt of *Probability*. For, he alone, of all the *Ancients*, has left any Monument of *Demonſtration* in *Metaphyſicks* and *Phyſicks*. The *Academicks*, where they leave the *Peripateticks*, were *Orators*, not *Philoſophers*. For, *Socrates* himſelf was meerly a Diſputer and a Doubter. *Plato* and *Ariſtotle* divided his School. *Plato* propos'd to himſelf, with his wholy-divine Wit and pureſt Eloquence, to ſet out *Probability*, and make himſelf admir'd for ſpeaking ſpecious things concerning the Principles neceſſary to Human life. *Ariſtotle* very conciſely hunting after truth by Experiments, and Marrying with the inſpection of Nature, the power of deducing Conſequences, deſign'd to ſhew the world Science in *Phyſicks* and *Metaphyſicks* worthy to vye with *Geometry*: And, therefore, as long as a Popular form of Common-

mon-wealth nouriſht the power of *Orators*, He was leſs eſteem'd. For, thoſe Famous perſons affected to manage Science after the manner of Civil Cauſes, without a ſolid and firm Judgment. The *Orators* at length, wearing out of credit, the Authority of *Ariſtotle* grew ſtronger; and has been deriv'd from the *Romans* to the *Arabians*; from them, to our *Schools*: the *Italians* firſt (to our knowledge) re-calling into the Weſt, the Science of the *Arabians*, which the wars long ſince had chas'd away.

2. 'Tis highly unjuſt, and a ſign of a Cavilling ſpirit, to pry into his Life, whoſe Doctine you go about to impugn: For, theſe Oratorial preventions of the Reader argue the Writer has no mind a candid Judgment ſhould be given of the Truth; but lyes in wait to diſtort Juſtice by ſtirring the Affections. Wherefore, hiſſing out thoſe things which are tattled againſt *Ariſtotles manners*, let's trace what's objected againſt his *Doctrine*. *Peter Gaſſendus*, then, in his *Third Exercitation*, objects it as certain, that 'tis *Ariſtotles* Opinion, in his Book of *Metaphyſicks*, that *God is an Animal*: Whereas, on the contrary, in the 8. Book of his *Phyſicks*, *Chap.* 6 and 10. He ſo expreſly makes God a ſubſtance immaterial, indiviſible, immoveable either by himſelf or by accident; that impudence it ſelf cannot be able to deny God, in his Opinion, not-an Animal. He adds, that God is ty'd to the out-moſt *Superficies* of the higheſt Heaven, which

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is extream-heedleſly ſaid in the *Peripatetical* Way: Whether you conſtrue *without Heaven*, in imaginary ſpaces (whereas *Ariſtotle* moſt expreſly atteſts there are no ſuch); or an Indiviſible adherent to Heaven; whereas, both the Firſt Mover muſt neceſſarily be ſaid to be in that which is firſt Moveable or Moved; and, tis well known, that, in *Ariſtotle's* way, the *Superficies* is mov'd only through the Motion of the Body whoſe it is; as alſo, the *Superficies* (as we have ſaid above) is a certain *being divided*, or term, or no-farther of a Body, and not any *Entity* in which God may be placed.

3. The next accuſation argues *God* bound up to the Laws of *Fate* and *Neceſſity*. But, here, the *Calumniator* is clearly in an Error. For, there are two kinds of *Fate*; one a *Stoical*; their's who aſſert that whatever things are, exiſt in forceof *Contradiction*, ſince, of neceſſity, every thing muſt either be or not-be; and this Fate *Ariſtotle* rejects: The other Fate is a *Courſe of Cauſes*. Since, therefore, 'tis evident and agreed by all, in the *Peripatetical* way, that *God* is the *Firſt-Being*, and by conſequence, the *Cauſe* of the whole *Series* of the reſt; moſt clear it is that, in *Ariſtotle's* School, *He* is not *Subject* to *Fate*, but himſelf the Fate of all other things; which is the moſt wiſe *Tenet* of the *Saints*, and the marrow of *Chriſtian Doctrine*. Like this is the other, that He is Subject to *Neceſſity*. For, the term, *Neceſſity*, is ambiguous: For, as tis attributed

to Animals contradistinctly from *Liberty*, so it takes away perfect knowledge; which no *Peripatetick* ever deny'd to God, to whom *Aristotles* Doctrine forces the very top of knowledge to be attributed. There's another *Necessity* springing from prefect knowledge; to which nothing lying undiscovered, one perfect in knowledge, and, consequently, *God*, can take but one way. But, this necessity implying the determination of an Understander to Particulars, out of Common Principles, manifestly speaks *Election* or liberty actuated.

4. He is farther calumniated to have taught that God knows not despicable and petty things; and, the 12. of his *Metaphysicks* is cited, where this is not found but by way of doubting: But, his best Interpreters conclude, out of other Texts, that *Aristotle* attributes the knowledge even of these too, to God. This crimination, therefore, argues an ill will, drawing the words of that excellent person to the worst sense. Yet, at least, He makes the World increated. But this may easily be deny'd. He asserted it, indeed, not-generated, or, impossible to have begun by Motion and the force of Natural Causes; which is most consonant to Christian Faith: But, as to the Creation of the World, he has not a word on't: Yet, 'tis one thing not to have acknowledg'd it, or reacht so high; another, to deny; amongst modest Men that babble not incertainties. Yet, I confess, he thought the World it self

Eternal:

Eternal: But, in his very Error, he ſhewed himſelf the chief of *Heathen Philoſophers*. For, whereas, they all with one conſent declared, that *nothing is made of nothing*, 'twas inconſequent for the World to have begun by Motion, which could not exiſt without Time; and no begining of Time, either out of its own eſſence, or by the action of moving Cauſes, could appear. Tis plain, therefore, that this Error of *Ariſtotle*'s argues his excellency above the reſt, who by Chance, and not by Science light on the Truth.

5. The laſt calumny about his *Tenets* concerns the *Immortality of the Soul*, which *Gaſſendus* ſaies, *Ariſtotle* in many places denies: but as disfavourably as before; ſince, his beſt Interpreters atteſt that he acknowledged it; and *Plutarch* records him to have written concerning the Soul, upon *Eudemus*'s death; out of whom is cited that famous Story of a dead man's Soul begging revenge of his Friend. Whence is evidenc'd that thoſe Interpreters err, who, out of *Ariſtotle*'s Principles, endeavour to conclude the Soul not immortal, and that this was *Ariſtotle*'s own ſence. It hits ſtrangely in fine, that the Author, otherwiſe very ingenious, ſhould judge this a fit Objection, that *Ariſtotle* denyed the Reſurrection of the dead: which, tis moſt certain, the light of Faith firſt diſcover'd to Mortals; though, after its acceptation on that account, its conformity alſo to the progreſs of Nature might be diſcern'd. This farther, that he concludes, ſaying, that *Ariſtotle* ſpeaks

many things wholly disagreeable to our *H. Orthodox Faith:* as if *Plato* and the rest of the Philosophers had tendred the World none but *Tenets* agreeable to *Faith*: which is by so much an unworthier part of *Gassendus*, in that he himself in his *Preface*, promises he'l shew that, tis by *Faith* alone, any thing comes to our knowledge of *God* and the *Intelligences*; and that all Arguments about these things, drawn from the light of Nature, are vain. A worthy *Epiphonema*, indeed, to close up his *Sixth Book*, design'd against *Metaphysick*, or the supreme *Science*.

Ninth Plea

Wipes off the Aspersions on Aristotle's *Doctrine and Terms.*

1. I Must now return from *Gassendus* to the Author of *The Vanity of Dogmatizing*; since he has selected the strongest *Mediums*: justly preferring them before that numerable rabble which *Gassendus* has heap'd together, even to cloying; out of love to reproaching, rather than Science. Our *English Academick*, then, first by way of *Preface*, as it were, seems to decline that envy, which the honourable train of *Aristotle's* Followers would be apt to procure him; applying that sentence of *Seneca's*, *The Multitude is an Argu-*

Argument of the worſt: ſo prone we are to err, even in the plaineſt things. For, tis evident, the Vulgar, in ſome things, follow men of excellence, as it were, their Captains; in other things are govern'd, or rather hurried by their own judgment. The former Method is that of Nature it ſelf, that many Ignorants may, by the vertue and Authority of a few, be carried to good: But, that the Vulgar ſhould judge of things themſelvs know not, and by a tumultuary conſent, precipitate the counſels of the prudent; this is oppoſite to the Laws of Nature and Reaſon. Here now enquire whence *Ariſtotle* has got an Authority with the Vulgar? and twill clearly appear he has been made the *Coripheus* of Philoſophers by the ſway of the very Princes of Scholaſtical *Theology:* to whom if you compare the Judgments of *Orators* or *Criticks*, they'l dwindle away to nothing. The Fathers themſelves (thoſe great Perſons pardon me if I ſay ſo) are of another different Trade; nor have fallen upon any Philoſophical Explication of *Faith*, otherwiſe than as forc'd to it by the importunity of *Heretick*s.

2. The Author ſubjoins, that in the opinion of the wiſe, *Peripeteticiſm* is a maſs of Terms that ſignifie nothing. But this Author knew not that his own Terms are ſo equivocal, that themſelves ſpeak nothing. For, who has ſufficiently fifted this, who, or by whoſe judgment they are called wiſe, that have pronounced this of the *Peripatetick*s? If we conſult *Ariſtotles*

ſtotles Works themſelves, or his ancient *Emulators*, tis clearer than the Sun, none ever of the Philoſophers ſo induſtriouſly, and by diſtributing ſo many of his Terms into obvious ſences, took care for the clearneſs of his Dictates, and elu ded the entanglement of *Equivocations*. Tis manifeſt then, the *Wiſe men* had little skill in *Ariſtotle*. They have miſtaken, therefore, for *Ariſtotelians* ſome Apes cloaking themſelves with *Ariſtotle*'s name, and expoſe other mens *Tenets* for *Peripatetical* ones: and (which he ſeems not to know) in very truth *Pyrronians*. For, whoever, in mighty Volumes and Queſtions piled one on another, teaches nothing elſe, but, that one part, indeed, is more likely, but either ſide is defenſible; in ſuch a World of twattle ſaies no more, than had he paſs'd ſentence in one Word, that *Nothing is clear*. This Calumny, therefore, touches his own Friends, not *Ariſtotle*.

3. Then, he proſecutes his Plea againſt the *Peripateticks* by certain Doubts; which either are not, or ſeem not, clear to him, in ſpight of Reaſon. The notion of *Materia prima*, which aſſerts it to have neither *Quiddity*, nor *Quantity*, nor *Quality*, he conteſts is a Deſcription of *Nothing*. 'Strange, that Men be ſo humorſome! Are there, perhaps, in all Nature more uſual words than *Being* and *Power*? Who is ſo ſottiſh, that he ſpeaks not thus of a piece of Braſs or Marble aſſign'd for the purpoſe, that it *is* not-yet, but

but *may* or *will be* a Statue of *Mercury*? Do they not, peradventure, underſtand themſelves that ſpeak thus; or, when they ſay, it *may be*, or has an aptitude to be a *Mercury*, Do they ſay the Braſs or Marble *is Nothing*, or, is nothing of *Mercury*? How, then, beſides *Mercury*, or the Form of *Mercury*, is there not a certain power or aptitude to be *Mercury*, which neither is *Mercury actually*, nor yet a notion of No-thing or Nothing? Or if, in reſpect of the *Figure* which conſtitutes *Mercury*, there is ſome aptitude which neither is *that*, nor yet a Notion of *Nothing*; why may we not affirm the ſame of a *Quantum* or Bulk, and ſay, a Boy *is* not yet big, but *may be big*? For he that aſſerts this does he not, at the ſame time, deny Bigneſs; and yet clearly he names an Aptitude to Bigneſs? Nor, perhaps, is there any difference in reſpect to *Entity*; for we ſcruple not to ſay that Tallow or Oile *may be Flame*, and yet that *they are not yet Flame*: the Tallow, therefore, or Oil neither are the *thing*, Flame, which they *may be*, nor *ſo big as they will be* when they are Flame, nor *ſo hot*; and yet they *may be Flame*, they *may be greater*, they *may be hotter*: and there is in them a certain *power*, which neither has *Quiddity*, *Quantity*, nor *Quality*; ſince they are refer'd to all theſe, and are in a preſent ſtate of privation in reſpect to them. Now whoever profeſſes this unintelligible, direſtly condemns Mankind for a company of Fools, that know not what they ſay in their vulgareſt ſpeech

and

and commerces: And, he that denies *Matter* it ſelf deſtroys that ſolemn Maxim of Philoſophy, that *Nature makes nothing of nothing.*

4. There are two other Terms which trouble our *Sceptick*, *Form* and *being educ'd out of the power of Matter.* As for the firſt, 'tis ſtrangely odd, that too much ſpeculation ſhould ſo render ingenious men no better than the moſt ſtupid. Can any man be born ſuch a Bruit, as not to own that one thing is diſtinct from another? or, if it be diſtinct, can he aſſert tis diſtinguiſh'd by nothing? Does the difficulty lie here, that this, by which tis diſtinguiſh'd ſhould be called a *Form*? what a ſtrange unreaſonableneſs is this, not to let me call that a Form, which I ſee diſtinguiſh one from the other? May not I ſay of two *brazen Statues*, that they agree in *Braſs*, and are diſtinguiſht by their *Figures*? Or, if there be a third of *Marble*, ſhall I be chid for ſaying, the brazen ones are diſtinguiſht from the Marble one, in that this is of Stone, thoſe other of Mettal? As, therefore, before, I diſtinguiſht *power* and *being* in ſubſtance, Quantity, and Quality; I may, now, in the ſame, find grounds for the denominations of Form and Subject in each of them.

5. As to the later Term, *being educ'd out of power*, let the ingenious Man reflect whether that which, out of ſome dark hole, ſoftly and by degrees comes forth nto open view, is improperly ſaid to be *educ'd or brought*

brought out. Again, let him remember (if he have ever ſeen a peece of Marble form'd by a Statuary) how, at firſt it cannot be imagin'd what the *Artiſt* means to form: after a little pains, there appears a confus'd reſemblance of a *Humane Creature*; then, whether it be a Man or Woman; and at length, what Man it is. Behold, how a man, which was potentially in the Marble, and confuſed in the dark, as it were, is by little and little educ'd by Art out of that confuſion into clear light, and the *Marble* is palpable and expreſly made a *Cæſar*. Philoſophers conſider as much in Nature; whether you obſerve the ſeeds of living things, or the Community of the Elements to be mixt into a compound, or the abſtraction of Matter from the Elements, whence this Phraſe *to be educ'd out of the power of Matter* ſignifies Matter out of its aptitude to many, to be determin'd, by the operation of Nature or Art to one certain thing; through a motion from confuſion to diſtinctneſs: and not to be, as it were, infus'd, with a dependance from the ſubject, as this *Anti-Peripatetick* fancies out of I know not what Dreamers. For, there are none of theſe triffles extant in *Ariſtotle*.

Tenth Plea

Maintains certain Definitions and Arguings.

1. NExt they ſhoot at two of *Ariſtotle's Definitions*, either of them moſt exact, and as clear

as can be, to thoſe that underſtand any thing in his way. The firſt is the Definition of *Light*, in theſe words, *Light is the act of a preſpicuous thing*: which ſeems obſcure to this race of people, becauſe the uſe of the Word *Act* is fram'd by Philoſophers, and not taken from *Tully*, or found in *Calipine*. Let them know, therefore, that *Act* is deriv'd from *Agere*, to do, or *Agi*, to be done, or the Participle *Actum*, done; and us'd by Philoſophers for that, by which what was intended by the Agent at the end of his Action is term'd or demonſtrated *done*. In Greek, perhaps, 'tis more elegantly call'd ἐνεργεία, as it were, the *Operation of the Cauſes*, taking the *Operation*, not for the Flux of the Action, but, for that which remains introduced by the Operation, which is ſuch a Flux. But, becauſe our language affords not a proper word correſpondent to the term, *Act*; our *Sterling Philoſopher* is all in choller againſt *Ariſtotle*. For, if he had put but ordinary words, inſtead of terms of Art, ſaying, *Light is a certain perfection of a body, that has this in its Nature, to let coloured things appear through it, making them* de facto *appear through it*; as we experience Objects are ſeen through illuminated Air, which are not ſeen through it darkened: what had he found worth making ſuch a wide mouth over? Now becauſe he has ſpoken moſt neatly and briefly, poor *Ariſtotle* ſmarts for it.

2. The other Definition has the ſame fault. The Defi-

Definition is this, *Motion is the Act of a thing in power, as in power.* For, ſince a thing is ſaid to be in power, to that it may be brought to by Motion; for example; One that's ſick, to Health; Wood, to firing, or to be fire: tis plain, that *Motion* is that perfection, or *act* with which *the ſubject* is affected whilſt 'tis yet *in power*, or, till the ſick perſon be in health, or the Wood be fire; *as in power*, or in that ſtate by which it may attain the intended perfection. Behold here a moſt clear and learned Definition, and ſubject to no other reproach than a certain umbrage, from a ridiculous ſtory concerning the Greek term ἐντελέχεια, which I believe fram'd by the Philoſopher to expreſs his intention emphatically. The ſtory's this; That a *Critick*, I know not who, went to one *Ciccus*, eſteem'd a *Magician* (I imagine, becauſe he wrote of *Magick*) to enquire of the Devil what was the meaning of that word ἐντελέχεια in *Ariſtotle*; and return'd as wiſe as he went, and mock'd at by the Oracle. That it may appear then what a Dunce Devil our Philoſophers have conſulted; lte them take notice that ἐντελέχεια is a word made up of three, ἐν τέλει ἔχειν, with the addition of a fœminine termination, which is proper for ſignifying *Abſtractions*: and ſo ſignifies the Manner the ſubject of Motion is found in at the end of the action; which is the very ſame thing with the term *Act*, as tis explicated above.

3. In his ſeventeenth Chapter there is a new Calumny forg'd againſt *Ariſtotle*; the more unworthily, in that

he, above the reſt, has endeavour'd at clearneſs. His Philoſophy is accus'd to be litigious, and through the wavering uſe of his Terms, confuſed and obſcure. This accuſation is found guilty of a double Ignorance: One, of what *Ariſtotle*'s uſe is; forhe's the carefulleſt that ever writ, to diſtinguiſh and form the ſignifications of his Terms: The other is, that he takes *Scepticks* for *Peripateticks*. And, that the *Scepticks* endeavours are the vaineſt that can be, I eaſily grant; that they little trouble themſelves about fixing the uſe of their words, to be leſt more at liberty to ſell any trifles they liſt for Vanity or profits ſake; that they are petty Orators, or rather janglers, not Philoſophers; that they take upon them the name of *Ariſtotelians*, to corrupt Youth and draw Diſciples after them. I deny not that theſe are to be ſhun'd like the Plaigue, by all purſuers of Science; nor is any thing of ſollidity to be expected from them: this one thing puts me out of patience, that Perſons, otherwiſe ingenious and deſirous of knowledge, ſhould be averted by theſe Cheats, not only from true Science, but from all hope of ever gaining any, in the things moſt neceſſary to human life.

4. They back their feigned Plea againſt the Philoſopher out of his own Words and Actions. Their firſt crack is upon that ſaying of his, that his Books of Phyſicks were *ſo publiſht, that they were not made publick*. The ſenſe whereof was, that the Matter or Subject hand-

handled in them is ſo abſtracted, that, without the aſſiſtance of an experienc'd Maſter, they could not be underſtood by thoſe unus'd to his way; which we ſee hold to this day: For, ſcarce any one comprehends thoſe Books, unleſs aided by the old Commentators. Whence our Moderns, for the moſt part, are quite beſides the Cuſhion as to *Ariſtotles* meaning; though he himſelf has ſpoken, as clearly as poſſible the brevity He prefixt to himſelf could bear. The next Calumny is groſſer and more luckleſs; that thoſe things which he has collected, to furniſh Logical Diſputants, and perfect the Act of Diſputing previouſly to giving Judgment, ſhould be applyed to his Method of Demonſtrating, and to his practice not in diſputing but defining. For, as, in *Plays*, 'tis a commendation to entangle the ſtory, that it may come off at laſt with greater admiration: So, 'tis the task of the Inquirer to confound the Queſtion, with propoſing Difficulties before it, that the Demonſtrator may clearly Vnidicate it, and, as it were, diſpelling the clouds, reſtore it to Light.

5. This Plea requir'd Inſtances out of that work of his. The Author preſſes three: Upon *Gaſſendus*'s credit, I believe, or ſome other ſlight Lookers into it; for, in the Book it ſelf there's nothing to be ſeen: The firſt runs thus. He proves the World to be perfect, becauſe it conſiſts of Bodies; that Bodies are perfect, becauſe they conſiſt of a triple dimenſion; that

that a triple dimenſions is, therefore, perfect, becauſe conſiſting of three; and that three is perfect, becauſe *two* we call *both*, and never ſay *all* till we come to *three*. Look into his Firſt book *De Cœlo*, *Chap.* 1. You ſhall find theſe laſt words make no part of the Demonſtration, but are additional only: and that the Demonſtration, it ſelf is this; Becauſe the World conſiſts of Bodies, the perfection of the World is to be perfect in the Notion of Body. Now, the perfection of Body lies in this, that it be ſpread every way upon three prependiculars, as the Geometricians demonſtrate. And thus are both the ſeveral Bodies, and the World; but in a divers manner; For the ſeveral Bodies are terminated each to others; whence, though they are ſpread according to all the lines, yet not to the whole, or utmoſt extent of them. But, becauſe there is no ſpace beyond or without the World (as 'tis demonſtrated in the fourth of his *Phyſicks*), the World is ſpread according to all and the whole lines, or, perfectly every way; and by conſequence, muſt be ſaid perfect in the Notion of Body, and, ſo, abſolutely.

6. The ſecond Inſtance is, that *Ariſtotle* aſſerts, were there more Worlds, the Moon would fall down upon the Earth. This conſequence the Arguer thinks ſprung from ſuch a fancy as theirs, that fear the *Antipodes* ſhould drop into Heaven. But, he reflects not how great pains the Philoſopher took to eſtabliſh the

the Center of the World in the Earth: Which granted, this conſequence would depend not from fancy but reaſon, as himſelf ſeems to confeſs.

7. The third Inſtance, too (drawn out of *lib.* 2. *cap.* 5. *De Cœlo.* Is utterly perverted. For, *Ariſtotle* teaches not, that the Heav'ns are, therefore, carry'd towards the Weſt, becauſe the Weſt is the Nobler, (as the Argument makes it); but, that the Weſt is the Nobler, becauſe the Heav'ns are carry'd towards it. Now, there's this difference betwixt the two; that in the former Method, 'tis aſſum'd without proof, that the Weſt is the Nobler; in the later, *it follows* out of thoſe things which *Ariſtotle* had concluded; *viz.* That there's nothing Accidental in Eternal Things; and, by conſequence, that the Motion towards the Weſt is Natural to the Heav'ns; and Natural Motion is to the more honourable: whence it clearly follows, that the Weſt is Nobler than the Eaſt. It follows, I ſay; for, if the Principles were true, 'twere a Noble Demonſtration.

Eleventh Plea

Refutes ſome Topicks babbled againſt Science.

1. ABout the end of the Chapter he expreſſes indignation, that the learned ſo employ all their pains upon Logick, Phyſick, and Metaphyſick; that the Sciences, uſefuller to human life, *viz.* concerning the Heav'ns

Heav'ns, Meteors, Foſſils, and Animals, but eſpecially Politicks and Oeconomicks, are much neglected. Nor can I deny that theſe are neglected in the Schools: but, what's guilty on't, but the Scepticiſm that reigns there? For, if the Sciences were taught in *Ariſtotle*'s Method, there would be room enough for all; nor would nature be taunted with the uſual calumny, that *Mans life is too ſhort for the Arts*: But, the neceſſary ones once known, there would advance ſtill a ſurpluſage of leiſure, to take abundantly, in any of theſe Sciences, that delight which human Curioſity ſhould be drawn to. But, they are the Scepticks that envy this happineſs to men; confounding all things with endleſs conteſts; eſpecially thoſe common truths which *Ariſtotle* has demonſtrated: ſuch as are *Formal Diviſibility*, that *what ever is mov'd is mov'd by another*, that *a* Continuum *or Bulk is diviſible* in infinitum, that *there's no* vacuum: and ſuch like; without the owning whereof before hand, 'tis in vain to make Experiments for acquiring Science: Since, they will all come at length to be reſolv'd into theſe Principles; or elſe there will be ever a ſtraining after Science unproffitably, without any Principles at all.

2. In his eighteenth Chapter, he reproves the Peripatetical Doctrine as inſufficient to ſolve *Phænomena*'s. But, this he does out of Error or Spleen: For, if he takes the Doctrine of our Modern Philoſophical Apes to be *Ariſtotle*'s own, he's ſtrangely in an error; but, if he denyes *Ariſtotle* to have taken pains to ſolve *Problem*'s, he'l

he'l be ſhewn guilty of Injuſtice by all his Books of Natural Philoſophy, thoſe eſpecially which uſually follow his eight Books. Which of the Moderns has more happily unbowel'd Nature than *Digby*, who at every turn is mindful of *Ariſtotle*, and candidly accepts his Dictates? The Adverſary urges that the *Syſteme of Heaven* is miſ-contriv'd by *Ariſtotle*. Open the accuſation, you'l find the ſum and very knot of it to be, that *Ariſtotle* had not an Optick Table: elſe ſuppoſing thoſe *Phænomenas* of the Sun, which enlightened *Ariſtotle's Age*, his Diſcourſe, in his Books *De Cœlo*, merits all admiration. That the *Intelligences* are the Movers of the Heav'n is Chriſtian Doctrine. That there is a certain Fire ſwimming upon our Air is nothing elſe but *des Cartes's Ether*, or a kind of rarer Element enbracing the convex of our sky. If *Ariſtotle* has err'd in a very few things; why, yet, ſo much anger? ſhall we not allow Philoſophy its growing time? If, yet, he may be ſaid to *Err*, and not rather ingeniouſly, and ingeniouſly to propoſe, who profeſſes he *conjectures*, not *Demonſtrates*; as *Ariſtotle* does in his Books *De Cœlo*.

3. His ninteenth Chapter inveighs againſt *Ariſtotle's* Doctrine as unfruitful and barren; but, weakly and falſely. Weakly, becauſe all the inventions he ſpeaks of belong to Artificers and Handy-craft-Men; not Philoſophers, whoſe office 'tis to *make uſe of* Experiments for Science, not to *make* them. Falſly, becauſe

Ariſtotle's way of Doctrine being about Common Notions, without which there's no comprehending Particulars; nothing is truly invented without it. I, but they are Generals that are found in *Ariſtotle*. It muſt be reply'd, that he and his Diſciples deſerve thanks for devulging them, and fixing a ſtep to climb thence farther and higher. But, (if my Divination fails me not) I ſee, were *Ariſtotle*'s Principles pluck'd up, Philoſophy unable to give an Account of ordinary Effects. I'm ſure, the Philoſophy which admits *Vacuities* is reducible to no Rules for acting: And *des Cartes*'s *Vortices*, I ſhrewdly ſuſpect no way ſerviceable to invention. Concerning his *Tenets*, which ſavour of impiety, we have ſpoken before. For his contradictions, the places are not cited: but, whoever is skill'd in *Ariſtotle* knows, he uſes to draw Examples out of others Books and vulgar ſayings; and that nothing is to be eſteemed his own, which falls not into the Courſe of his Doctrine. Whence, 'tis no hard matter to find contrary Opinions in his works: but, thoſe things alone are to be aſcribed to him, which either are aſſerted in their proper places, or brought by him for confirmation of his known *Tenets*.

4. The twentieth Chapter renders manifeſt the eminence of Peripateticiſm above all other Methods, by its very impugnation of it. For, it aſſumes, it cannot be known that one thing is Cauſe of another, otherwiſe than becauſe they are found together: which we deny not to be an occaſion of ſuſpecting, but no Argument

of

of Cauſality; for, if nothing elſe be clear, 'twill be ſtill unknown, which of the too is the Cauſe, which Effect. But, the *Peripatetick*s conclude not *A.* to be the cauſe of *B.* till, defining both, they find, out of their very Definitions, that *A* cannot be, but it muſt follow out of its intrinſecals that *B* is. For example, a Peripatetick collects that Fire is the Cauſe of Heat; becauſe Heat is nothing elſe but Atoms flowing from Fire: and on the other ſide, he knows that Fire cannot exiſt, but it muſt ſend out ſuch particles. *Des Cartes*'s paradox, of Light and the Sun, is juſt as if we ſhould expect the Skyes falling to catch Larks. That wonderfully ingenious Man is ſo cœleſtial, that he has not ſo much as Sand to found his ſtructures on. Peripateticks chuſe rather to collect a few Certainties, acknowledging a Multitude of uncertainties, than, graſping at all, to hold nothing. Sure I am, none more largely pretends Demonſtration, than *des Cartes*: So that, nothing is more unſeemly than for his adorers to profeſs Scepticiſm.

5. Not a jot ſtronger, to eſtabliſh the impoſſibility of Science, is the argument from the variety of Opinions amongſt thoſe that are call'd Philoſopers. For firſt, it muſt be evident that they *are* Philoſophers: before their judgements deſerve eſteem in Philoſophical matters. Do they profeſs to Demonſtrate? Do they model their Books in *Euclid's* Method? Do they interweave Definitions with ſelf-known truths? And admit no other for proof? All which may be obſerv'd

in *Ariſtotle* and his antient interpreters, though not expreſs'd in *Euclids* form. Theſe things if they do, either they are not rational, or all will be of the ſame mind; as Geometricians are. If they neglect theſe, 'tis not a pin matter for their judgments in Philoſophy. Our Author tells a ſtory of the power of Fancy, which I doubt is imperfect: For, it ſeems, he would have one Man be able to order anothers thoughts without ever acting by his ſenſes or Fancy: Since, he relates, that one compel'd others, abſent from him, to think and ſpeak what he pleas'd. For, though I allow Men to have a very large power over Animals, by the help of their Fancies; for example, to tame or enrage them, by means of ſounds or ſhewing them figures; perhaps, too, to ſtrike them ſick or cure them, and ſuch like: Yet, that the Fancy ſhould be mov'd to thoſe things, which move it not by any ſenſe, 'tis hard to believe. For all that, I do not altogether deny the Motion made upon the ſenſe to be every way like, and Univocal to that which is in the mind; and, when it happens, to be deriv'd rather from the vehemencie of the affection, than the pure Motion of the Fancies impreſſing it.

6. In this twenty firſt Chapter, he divines of Future Science; particularly, of ſome not-yet diſcoverd manners of acting at diſtance: which I'le rather await, than diſcuſs or hope for. About the end of the Chapter, he aſſumes, that nothing can be known, unleſs it be reſolv'd into the firſt Cauſes. Whence, he ſhould have ſeen clearly

clearly that the Firſt Cauſes, and *Metaphyſicks*, which treats of them, is moſt known of all to Nature, or next to our firſt knowledges: And that Naturaliſts ſtrive in vain, who negotiate much about the particulars of Nature; and comprehend nothing through their ignorance of *Metaphyſick*. Take for example the ſtir about *Vacuum*; which *Metaphyſicks* declare as impoſſible, as for no-thing to be a thing: about the ſpring of *Rarity* and *Denſity*; which the *Metaphyſician* moſt palpably demonſtrates is out of, or, extrinſecal to the things that are Rare and Denſe, and many ſuch like; whoſe truth thoſe that eſſay by Experiments, but without the light of *Metaphyſick*, ſhall find an endleſs work on't. Metaphyſical Principles muſt be taken from *Ariſtotle*, not *des Cartes*, though a Perſon of moſt eminent Wit. For, *Ariſtotle*, by contemplation, form'd into method thoſe things which he *found* engrafted in *nature*: *Des Cartes*, in his Phyſical principles (as if he meant to preſcribe the *Creator* an *Idea*) deſigns in the Air and in the Concave of the Moon, as they ſay, what himſelf thought was to be done, according to Art. From which kind of Fabrick there's no benefit to be hoped for by the Reader.

7. The next Chapter is ſick of that error, which *Ariſtotle* has very often detected and confuted; *viz.* that nothing is known unleſs it be perfectly known: for example, that we know not *God is*, unleſſe we ſee him, that any Man cannot make uſe, and be ſure of that *des Cartes*'s firſt-known thing or Object of knowledge, *I*

think,

think, therefore I am, unleſſe he comprehends the *all things* of that *I*; ſo, as to know the Nature of his Matter and Form, the Number of his *Elements* and *Members*, and the Cauſes and Motion by which he was begotten, and in ſhort, whatever is connected with him. Which is clearly to profeſſe, he knows not the queſtion in hand: For, none of the Dogmatizers either arrogates to himſelf or hopes for ſo perfect a knowledge. 'Tis a piece of the ſame heedleſneſſe, not to know that all that ſee a *white wall* have the ſame apprehenſion of *whiteneſs*, though their ſeveral ſenſations vary the degree and perfection of it. Whence, our Author had done more prudently to have ſat down in ſilence, and pardon'd the affecters of Science their error; than, by meerly Topical and Deluſory Reaſons, to have averted minds, born to excellent things, from the firſt deſire of Nature, and gathering fruit, at leaſt, in ſome degree; according to that of the moral Poet,

Though you of Glycons *mighty lims deſpair,*
Do not to keep away the Gout forbear.

8. For all that, our Academick makes no ſcruple, in general, to lay all kind of miſchief to thoſe that proceed dogmatically, *ſuch Art* (as the Philoſophers ſays) *it requires to find a mean*. Firſt he aſſerts this Method is the Daughter of ignorance? who would have look'd for this brand from a Sceptick? you that profeſs your ſelves *to know nothing*, do you object ignorance to others?

Quis tulerit Gracchos de ſeditione querentes?

Next, he calls it the Inmate of untam'd affections: upon what title? for, if there be any Science, that will

The peaceful Temples keep well fortifi'd,
Built by the Sages Doctrine.——

You that profeſſe you know not whether there be any or no; how raſhly do you affirm it to dwell alwayes with untam'd affections? ſince, if there be none, it dwells no where. The third inconvenience of *Dogmatizing* is, that it ſtirs men up to controverſies. The riſing Sun ſeems to me guilty of the very ſame Crime, in diſturbin the *Slug-a-beds*, and ſummoning every one to their work: For, ſuch a kind of falt it is, to inculcate Truth to thoſe that live in ignorance and error. A fourth crime is, that one who adheres to any Science, lays ignorance to the charge of thoſe that know not his demonſtration. I cannot deny it; For, 'tis the Nature and Title of light to reproach thoſe things, as dark, which admit not its beams. But, herein the Demonſtrators are modeſter than the *Scepticks*, that, at leaſt, they except ſome, and ſpeak well of *Nature*; whom, with all her Children, the *Scepticks* condemn to the Dungeon of Darkneſſe for ever.

9. Like this is the next, that the confidence of Science in error bars the Gates againſt the liberty to get poſſeſſion of truth. How blindly does the *Sceptick* diſpute theſe things? who freely owns that truth is no where, which men might have the liberty to get poſ-

ſeſſion

ſeſſion of. He concludes at laſt, the *Dogmatizer* has a petty and enthrall'd *Soul*. So ſtrangely things are nicknam'd that are unknown! For, tis *Science*'s part to dilate the Soul, and render it capable of great things: and this the pleaſure of one that *knows*, to look down on *Scepticks* as all in a tumult below, and

Lucret. *See them at a loſs at every turn,*
And breathleſs hunting out the way of life.

Which to make ones life and Task is the miſerableſt of all things, and an utter caſting off *Rationality*; and the whole felicity *Humanity* affords. Theſe things, as they are all moſt true, and ſcarce deniable, even by a *Sceptick*, to follow out of the poſſibility of *Demonſtration*, that is, if there be any Rational Nature, yet I would not have them ſo aſſerted, as to Patronize palliated *Scepticks*, who admit, indeed, that there is ſuch a thing as ſome both *Phyſical* and *Metaphyſical* Science, in common; but neither tend to it by any legitimate Method, nor own any thing, in particular, demonſtrated: and yet, by the preſs of the Herd, in a ſociety, thruſting one another on, and by loads of Scriblers, they moſt abſurdly fly at and arrogate to themſelves the higheſt degree of *Doctorſhip*, and the top of Sciences and name of Wiſdom. The Father of Nature grant Mankind may at length be eas'd of this Yoak; which galls the necks of the Sons of *Adam*: and, that the ſtudious of truth may underſtand it alike dangerous to think *every thing* and *nothing* is demonſtrated.

FINIS.

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This White was a secular romish Priest, a most learned & ingenious Person, one highly valued for his Parts, & a great Acquaintance of Hobbes's, with whom he is said often to have disputed, & often to have beat in Point of Argument. They both lived to great old Age. — There is a small Tract of White's intitulled "The Grounds of Obedience & Government by Thomas White Gentleman", the second edition of which was printed 1655 in 12°. It is extreamly scarce & equally curious; & wrote in the true Spirit of Liberty. Indeed the principles of Government were never more discussed nor better understood than in the Time of the civil Wars being before either Algernon Sydney or Mr Lock were Writers on that Subject. I have many Tracts wrote in that period now in my Possession which fully prove this fact. Vide.

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